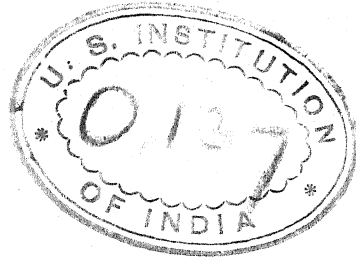


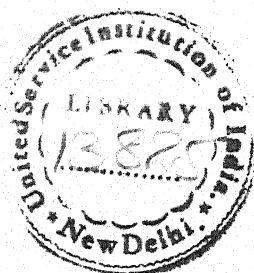
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HISTORICAL RECORD
OF THE
2ND "QUEEN'S OWN"
SAPPERS AND MINERS.
FROM 1780 TO 1909.

COMPILED BY
LIEUT.-COLONEL C. H. ROE, R.E.,
COMMANDANT, "Q. O." S. & M.

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PREFACE.

This record has been compiled mainly from the "RECORD OF THE 'QUEEN'S OWN' MADRAS SAPPERS AND MINERS, 1780 to 1890." by Lieut.-Colonel C. B. Wilkieson, R.E., late Commandant, Q. O. S. & M., and from the "HISTORICAL RECORD OF THE 'QUEEN'S OWN' SAPPERS AND MINERS, 1780 to 1876," by Lieut.-Colonel W. J. Wilson, late of the 43rd Regiment, Madras Native Infantry, and I have in many places copied their books verbatim; the "MILITARY HISTORY OF THE MADRAS ENGINEERS AND PIONEERS," by Major H. W. Vibart, has also been consulted.

Bangalore,
1-11-09.

C. H. ROE, Lieut.-Col., R.E.,
Comdt., "Q. O." S. & M.

PREFACE TO "RECORD" BY LIEUT.-COLONEL C. B. WILKIESON.

This record has been compiled to fulfil the conditions laid down in Queen's Regulations, Section XXII., paras. 61-63. The subsequent history of the Corps will be recorded by collecting the annual Administration Reports, commencing with that for the year 1891.

Bangalore,
1-10-93.

C. B. WILKIESON, MAJOR, R.E.
Comdt., "Q. O." S. & M.

PREFACE TO "HISTORICAL RECORD" BY LIEUT.-COLONEL W. J. WILSON.

I am indebted to Colonel Prendergast, V.C., C.B., R.E., Commandant of the Corps, for the accounts of the services of the several Detachments employed in Malacca, Scinde, Afghanistan, Persia, Central India, and Abyssinnia.

The account of the Corps from the period of the establishment of a body of Pioneers in 1780, up to the conversion of the two Battalions of Pioneers into a Corps of Sappers and Miners, viz., the 1st Battalion in 1831, and the 2nd Battalion in 1834, has been compiled from the records in the Government Office and in that of the Adjutant-General, where I have been afforded every assistance.

When the history of a Regiment can be traced to a considerable extent from a series of public acknowledgments for services rendered throughout the period of its existence, as may be done in the case of this very distinguished Corps, comment on the part of the compiler would be superfluous, and I have therefore abstained from introducing any matter beyond that which was required to form a connected narrative.

THE MADRAS SAPPER.

"The best Native Soldiers, taking them all round, whom I ever served with in India were the Madras Sappers. Their coolness under fire, indifference to danger, their discipline and their pride of regiment marked them on all occasions as first-rate soldiers."

GENERAL VISCOUNT WOLSELEY.

(Fortnightly Review, August, 1888.)

"We may now be nearly certain that whenever India is called on to put an army in the field, the "Queen's Own" Sappers and Miners will form part of that army.

"Wherever the Madras Sappers have been employed they have added to their reputation and done credit to their Presidency."

GENERAL SIR F. ROBERTS.

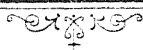
(Speech to the Q. O. S. & M. at Bangalore, in February, 1883.)

"My experience of the Madras Sappers during the last campaign in the Soudan confirms the impression I received during the campaign in Northern China in 1860 as to the invaluable qualities of the men of this Corps, whether displayed in hard work or in hard fighting."

LT.-GENERAL SIR G. GRAHAM.

CAMPAIGNS AND EXPEDITIONS

IN WHICH THE CORPS HAS BEEN ENGAGED.



1.	Campaign against Haidar, under Sir Eyre Coote	...	1781-82.
2.	First War with the Dutch	...	1781-82.
3.	First War with Tipu Sultan	...	1783-84.
4.	Operations in the Shivaganga Country	...	1789.
5.	Second War with Tipu Sultan	...	1790-92.
6.	Siege of Pondicherry	...	1793.
7.	Second War with the Dutch	...	1795-96.
8.	Third War with Tipu Sultan	...	1799.
9.	Operations during 1800-02.		
10.	Expedition to Egypt	...	1800-02.
11.	First Mahratta War	...	1803-04.
12.	War in Travancore	...	1809.
13.	Expedition to Bourbon	...	1810.
14.	Expedition to Java	...	1811.
15.	Second Mahratta War	...	1817-19.
16.	First War in Burma	...	1824-26.
17.	Expedition to Malacca	...	1832.
18.	War in Coorg	...	1834.
19.	Operations in Kimedi	...	1834.
20.	Operations in Gumsur	...	1836-37.
21.	Campaign in Kurnool	...	1839.
22.	First War in China	...	1840-42.
23.	War in Kelat and Afghanistan	...	1840-42.
24.	War in Scinde	...	1843.
25.	Second War in Burma	...	1852-53.
26.	War in Persia	...	1857.
27.	Suppression of the Mutiny	...	1857-58.
28.	Second War in China	...	1860.
29.	Expedition to Abyssinia	...	1867-68.
30.	Campaign in Perak	...	1875-76.
31.	Expedition to Malta and Cyprus	...	1878.
32.	Second War in Afghanistan	...	1878-80.
33.	Expedition to quell disturbances in Rumpu	...	1879-80.
34.	War in Egypt	...	1882.
35.	War in the Soudan	...	1885.
36.	Third War in Burma	...	1885-90.
37.	Minor Operations, Burmese Frontier	...	1891-93.
38.	Chitral Relief Force	...	1895.
39.	Suakim Force	...	1896.
40.	Tirah. and North West Frontier of India	...	1897-98.

HONOURS AND DISTINCTIONS.

Colonel-in-Chief: . . . HIS MAJESTY THE KING

The Royal Cypher within the Garter
 . . and Title of "Queen's Own." . .

CARNATIC.

SHOLINGHUR. MYSORE.

SERINGAPATAM. EGYPT, with the SPHINX.

ASSAYE. JAVA. NAGPORE. MAHIDPORE. AVA.

A Dragon wearing the Imperial
 Crown with the word "China."

MEEANEE. HYDERABAD. PEGU. PERSIA.

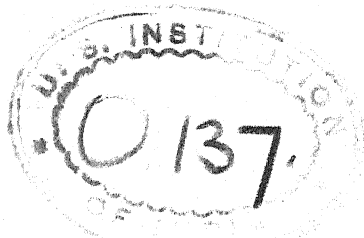
CENTRAL INDIA. LUCKNOW. TAKU FORTS.

PEKIN. ABYSSINIA

AFGHANISTAN, 1878-80. EGYPT, 1882.

TEL-EL-KEBIR. SUAKIM, 1885. TOFREK.

BURMA, 1885-87. CHITRAL. MALAKAND. TIRAH.



HISTORICAL RECORD

OF THE

2nd "Queens Own" Sappers & Miners.

BETWEEN 1761 and 1780, Companies of Pioneers and Miners were 1761-80 formed from time to time of volunteers from the European Infantry and the Native Battalions, and were broken up when no longer required. During this period, these Companies were frequently employed, viz., at the siege of the Fort at Vellore in 1761 by the force under Colonel John Caillaud commanding the Madras army; with the expedition against the Spanish Settlements in the Phillipine Islands in 1762; at the storm of the town of Manilla and the capture of the citadel on the 6th October of that year; at the siege and surrender of Tanjore in 1771, on which occasion their conduct was highly praised by General Joseph Smith; at the 2nd siege and storm of the same place in 1773; at the siege and capture of Pondicherry in 1778 by the army under Sir Hector Munro; and at the capture of the French Settlement of Mahe in 1779.

The 2nd "Queen's Own" Sappers and Miners were originally a corps of Pioneers, officered from the Line. They were first raised in 1780, and were maintained until 1831, when in conformity with instructions from the Court of Directors, the 1st Battalion was placed under the command of Engineer Officers, and regularly instructed as Sappers and Miners, which designation the Corps has since continued to bear. The 2nd Battalion of Pioneers continued on the establishment until early in 1834, when the European Officers were sent to join their respective regiments, and the Native Ranks were incorporated into the Sappers and Miners.

In September 1780, Lieut. John Moorhouse of the Artillery, then 1780. Commissary of Stores, and entrusted with the general supervision of working parties, recommended the formation of two permanent companies of Native Pioneers, in supersession of the common labourers theretofore temporarily employed in that capacity as occasion might require, in addition to the temporary companies mentioned above. He reported that the temporary labourers were not only inefficient, but that they were apt to throw down their working implements, and fly on the appearance of an enemy. The Government of Madras having approved, the following order was issued:—

G.O.G. 30-9-1780. "The Honourable the President and Select Committee are pleased to direct that two companies of Pioneers be raised as soon as possible by the Commissary of Stores, each company consisting of 2 Sergeants, 3 Corporals, 5 Havildars, 5 Naicks, and 100 Black Pioneers. The Havildars to be paid 3½ Pagodas per month, the

HONOURS AND DISTINCTIONS.

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The Royal Cypher within the Garter
. . and Title of "Queen's Own." . .

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BURMA, 1885-87. CHITRAL. MALAKAND. TIRAH.

PUNJAB FRONTIER. 1897-98. CHINA, 1900.

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1780. Pioneers are raised, they are to be employed with the army to clear and mend roads, etc., instead of mamooty men, for whom no charge is then to be made. The stoppages from the above corps to be the same as those made from the Sepoy Corps for half mounting, and they are to be supplied with the same articles the jackets, only to be blue instead of white."

1781. **Campaign against Haidar Ali, under Sir Eyre Coote, 1781-82.**—Two companies, under Lieut. Innes, took part in this campaign. They marched with the Advanced Guard of the army from St. Thomas' Mount for the relief of Wandiwash in January 1781.

24th January 1781. Relief of Wandiwash.

An order dated 29th June gave the position of the Pioneers on the line of march—"One company of Pioneers to march at the head of the line, and the other to be divided among the divisions of guns in the line."

1st July 1781. Battle of Porto Nuovo, near Cuddalore.

27th August 1781. Battle of Polliloor.

27th September 1781. Battle of Sholinghur.

23rd October 1781. Battle of Virakandalur.

1782. November 1781 to January 1782. Reliefs of Vellore, and skirmishes with Haidar.

2nd June 1782. Battle of Arni.

For this campaign, the honours "CARNATIC AND SHOLINGHUR" were granted to the Corps under G.G.O. 378, of 26-4-1889.

1781. **First War with the Dutch, 1781-82.**—One company of Pioneers under Lieut. Abbott was serving with the southern army commanded by Sir Hector Munro, and was present at the siege and capture of Negapatam in October and November, 1781.

1782. About 1st January, 1782, this company, augmented by volunteers from the 9th (now the 69th Panjabis), and 23rd (this battalion was disbanded at the reorganisation of the Madras Army in 1796) Native Battalions, embarked at Negapatam with the expedition against the Dutch possessions in Ceylon, and was present at the capture of Trincomali on 5th January, 1782, and at the capture of Fort Osterburg on 11th January, 1782.

1783. **Operations against the French at Cuddalore, 1783.**—A detachment of the Pioneers served with the army under Major-General James Stuart, engaged in the attack of the French Lines at Cuddalore on 13th June, 1783, moving with the centre column, and at the siege of Cuddalore during June and July, their strength present being 284 N.C.O.s' and men, under the command of Lieut. Mitchell. Intelligence of peace with France was received early in July, and the hostilities having ceased at Cuddalore, the army returned to Madras in August.

First War with Tipu Sultan, 1783-84.—Altogether 3 companies under Ensign Cunningham took part in this War. A force under Colonel Ross Lang, of the Madras Army, was employed to create a diversion against Tipu by attacking his districts of Dindigal and Coimbatore, and a detachment of the Pioneers accompanied this force. The Fort at Karur was taken on the 5th April, 1783, and that at Averakurchi on the 16th idem, whilst Dindigal Fort was captured on the 5th May. Shortly after, Colonel Lang was superseded by Colonel William Fullarton of H.M. 98th regiment, and the force was augmented to a strength of about 13,600 men, of whom about 2000 were Europeans. The Pioneers under the command of Ensign Cunningham, amounting to 147 men, proved remarkably useful during the ensuing operations. They were engaged in the attack and capture of the Fort at Panjalamkurchi on the 12th August, where, under Ensign Cunningham they removed the strong hedge fronting the breach; in that of the

stronghold of the Shivagiri Polygar on the 2nd September; at the 1783. reduction of the Forts at Kamalum, Chaklagiri and Annamalli in October; at the siege and capture of the Fort at Palghatcheri on 13th November; and the surrender of Coimbatore on the 26th idem.

The service of the Pioneers at Panjalamkurchi were thus acknowledged by Colonel Fullarton:—

“Our next object was to remove a strong hedge fronting the breach and surrounding the whole Fort, as is the practice in the Polygar system of defence. This dangerous service was effected with unusual skill by Ensign Cunningham commanding the Pioneers, and about ten at night, with the advantage of bright moonshine, the storm* commenced.”

The following extract from the report of the same officer relates to the operations against the stronghold of the Shivagiri Polygar, at that time the most powerful of the southern chiefs, and who had on former occasions beaten off considerable detachments:—

“After reconnoitring we found that the comby† could not be approached in front. We proceeded therefore to cut a road through the impenetrable thickets for three miles to the base of the hill that bounds the comby on the west. The Pioneers under Ensign Cunningham laboured with indefatigable industry.”

* * *
“We continued to cut our way under an unabating fire from eight thousand Polygars, who constantly pressed upon our advanced party, rushed upon the line of attack, piked the bullocks that were dragging the guns, and killed many of our people. But those attempts were repulsed by perseverance, and before sunset we had opened a passage entirely to the mountain.”

The Pioneers also proved most efficient during the march from Annamalli to Palghat, which is thus described by Colonel Fullarton:—

“From Annamalli our progress became truly laborious; we had to force our way through a forest twenty miles in depth, extending thirty miles across the pass of Palghat. Our object was to reach Kalingudi a post on the western side of the forest within fifteen miles of Palghatcheri. The frequent ravines required to be filled up before it was possible to drag the guns across them; innumerable large trees which obstructed the passage required to be cut down and drawn out of the intended track, and then the whole road was to be formed before the carriages could pass. The brigades were distributed to succeed each other at intervals, preceded by Pioneers in order to clear what the advanced body had opened for the guns and stores that were to move under cover of the rear division.”

Heavy rain fell for 14 days without intermission, and the troops 1784. were exposed without tents. Peace was concluded with Tipu on 11th March, 1784, and shortly afterwards, Colonel Fullarton commanding the Madras Army in the field, reported:—

“It is further extremely requisite that your establishment of Pioneers should be increased, not only for expertness and despatch in preparation for a siege, but to facilitate the rapid movement of your armies.”

The Pioneers do not appear to have been again employed on Field 1788. Service until September, 1788, when a small detachment under a European officer was attached to the force under Lieut.-Colonel James Eidington, which took possession of the district of Guntur.

* The assault was repulsed with loss although led by two companies of Europeans. Immediate measures were taken to renew the attack, but the Polygars, disheartened by their loss, abandoned the place the same night.

† A stronghold in the mountains.

Field service in the Shivaganga country.—In March, 1789, a detachment of 80 Pioneers was sent from Trichinopoly to join the field force assembled under Lieutenant-Colonel Stuart, H.M. 72nd* Regiment for service in the Shivaganga country. It was present at the capture of Kollargudi on the 14th May, and of Ranamangalum and Kalakoil on the 1st and 2nd June respectively. The following order was issued by Government on the conclusion of the service:—

G.O.C. Fort St. George, 17th June, 1789. "The service for which the detachment was sent into the Shivaganga country being nearly accomplished, Colonel Stuart is desired to take the necessary measures for the return of the troops to their respective stations, excepting one battalion of native troops, which the Colonel will dispose of in the Shivaganga country in such manner as he may judge expedient."

"Government take this opportunity of returning their thanks in this public manner to Colonel Stuart for his gallantry and good conduct in the command of the detachment, and they desire he will communicate to the officers and men their perfect approbation of the spirited and regular behaviour of the whole of the detachment during the service."

Second War with Tipu Sultan, 1790-92.—The Pioneers under Lieut. W. Dowse, M.I., who had been appointed to the command of the Corps on 11th February, 1790, served with the army under General Medows, and Lord Cornwallis, during 1790-91-92. The other officers serving with the Corps during this campaign were Lieut. W. C. Lennon, M.E., and Ensign Stokoe, B.E. The army started from Trichinopoly on 28th May, 1790, and was engaged in various operations south of the Mysore Plateau from June to December, 1790.

On 7th June the Pioneers were increased to 5 companies, with 1 Lieutenant Commanding, and 1 Ensign. Each company to consist of:—

1 Sergeant, 4 Havildars, 4 Naicks, 90 Privates, and to carry 60 hand hatchets, 40 bill hooks, 48 pickaxes, 6 picks, 10 felling axes, and 28 mamooties.

Two detachments of Pioneers under Lieuts. Dowse and Lennon were actively employed in the operations at Bangalore from the 5th to the 21st March, 1791, when the place was carried by assault; their loss during that time was 24 killed, 25 wounded, and 3 missing, being greater than that of any other individual Corps engaged, with the exception of H.M. 36th Foot, which had 10 killed and 58 wounded. They were present at the action of Arikere near Seringapatam on 15th May, losing 2 men wounded, and at the capture of Ramandroog on 17th September. whilst Lieut. Dowse and 100 men were present at the capture of Nandidroog on 18th October. The following is an extract of the order issued by Lord Cornwallis on 19th October:—

"Although the services of Pioneers are less brilliant than those of the troops, they are of peculiar value in all such operations, and His Lordship thinks himself called upon in justice to Lieut. Dowse and all the N.C.O.s and men of the Pioneer Corps, as well as to Ensign Stokoe of the Engineers, who assisted with so much ability in directing their labours, to declare that their behaviour on this occasion has deserved his highest commendation."

Lieut. Dowse with a detachment of the Pioneers accompanied the Chief Engineer, when the latter went to reconnoitre Savandroog, and they were present at the assault and capture of that place on 21st

* Originally the 78th or Seaforth Highlanders; became the 72nd in 1785.

December by the force under Lieut.-Colonel Stuart, and also at the storm of Hutridroog on 24th idem; Lieut. McInnes of H.M. 72nd led the storm, with part of the Europeans, and with the Pioneers under Lieuts. Dowse and Macpherson, supported by Captain Scott. Some of the gateways were forced by the Pioneers, but most of the ramparts were carried by escalade. 1791.

The following is an extract from the order issued by Lord Cornwallis, on receiving Colonel Stuart's report of the reduction of Savandroog:—

"His Lordship likewise desires xxxxxx and that it may be particularly signified to Lieut. McInnes of the 72nd regiment who led the European company, and to Lieuts. Macpherson and Dowse who conducted the European and Native Pioneers that were employed in carrying the scaling ladders and breaking open the gates, that from Lieut. Colonel Stuart's report, he considers their behaviour highly meritorious."

The army under Lord Cornwallis arrived before Seringapatam on 6th February, 1792, and on the same night an attack in 3 divisions was made upon the redoubts and other outworks of the place. The number of Pioneers then with the army was 3 British Officers and 1034 B.N.C.O's. and Native Ranks; of these, one detachment under Lieut. Lennon, M.E., accompanied the Right Division commanded by Major-General Medows, another under Lieut. Dowse moved with the Centre Division under Lord Cornwallis, whilst a third under Ensign Stokoe, B.E., proceeded with the Left Division commanded by Lieut.-Col. Maxwell. Each detachment of Pioneers carried scaling ladders, and they had to cut an opening through the bound hedge, which surrounded Tipu's encampment, north of the Kaveri river. The Centre Division forced its way on to the Island of Seringapatam, and a part of it becoming detached, and believing that it was isolated, Lieut. Dowse volunteered to recross the river, and report the state of affairs to Lord Cornwallis, but he ran against a party of Mysore Horse, and was driven back. All three Divisions were successful in their several objects, and the posts carried were maintained. The Pioneers lost 13 killed, 8 wounded, and 2 missing, in these attacks. They were thereafter employed in the siege operations, being placed by G.O. of 18th February, under the orders of the Chief Engineer for the remainder of the siege; hostilities ceased on 24th February, pending the settlement of the conditions of peace, which were finally concluded on the 19th March, 1792. 1792.

For this campaign, the Honour "Mysore" was granted to the Corps under G.G.O. 378, dated 26-4-1889.

At the end of June, 1792, the Pioneers under Lieut. Dowse were sent from Trichinopoly to Madura to join a Field Force then being assembled at Palamcotta under Lieut.-Colonel Maxwell to punish the Poligar of Shivagiri, and this fort was attacked in August, and the country reduced to submission.

Towards the close of 1792, Colonel Braithwaite, commanding the Madras Army, submitted proposals for the augmentation of the Pioneers; the establishment he recommended was that there should be three bodies of Pioneers one for each Division of the Army, each body to consist of 2 Companies with 1 European Officer per company, and each company to have:—

1 Sergeant, 1 Jemadar, 6 Havildars, 6 Naicks, 122 Privates, 2 Bhistsis, 12 Artificers, giving a total of 150 per company, exclusive of the European Officer.

Whilst these proposals were under the consideration of the Government, the Pioneers were moved to Dindigal in December, and employed in clearing the forest there until May 1793, when they 1793.

1793. marched for Barahmahal.

In June, as soon as it was known that war had been declared against France, the Government of Madras commenced preparations for the siege of Pondicherry, and Colonel Braithwaite again recommended that "that very useful Pioneer Corps should be augmented, by 150 men, i.e. brought up to a strength of 600." The Corps was accordingly augmented, and formed into a separate Corps, under G.O.G. dated 11-7-1793, as follows: "The Honourable the President in Council is pleased to direct that the Pioneers on this establishment be considered a separate Corps, the Officers to be supplied from the Infantry, and to rise in the list of the army in like manner. That it consist of 1 Lieutenant Commandant, 3 Lieutenants, 1 Assistant Surgeon, and 6 Companies, each to consist of 1 Sergeant, 1 Jemadar, 3 Havildars, 3 Naicks, and 100 Privates. That 8 pakhalis be allowed to the Corps, 1 Conocopoly, and 1 Assistant Conicopoly. That the Lieutenant Commandant be upon the same footing with regard to off-reckonings, as the commandants of Corps of Native Cavalry.

The pay was fixed as follows—

	Pagodas.	Fanams.	Cash.	
Sergeant	10	—	—	per month.
Jemadar	7	10	—	"
Havildar	2	31	75	"
Naick	2	10	5	"
Private	2	—	—	"

Note.—80 Cash equal 1 Fanam; 45 Fanams 1 Pagoda; 1 Pagoda 3½ Rupees.

Siege of Pondicherry, 1793.—The Corps then numbering 612 of all ranks, under Lieut. W. Dowse, M.I., with Lieut. O. Grose, M.I., and C. Armstrong, M.I., was employed with the army under Colonel Braithwaite during the siege of Pondicherry, till its surrender in August; the Corps losing 4 Europeans and 5 Natives killed, and 1 Jemadar, 1 Havildar, and 11 men wounded. After the surrender, the Pioneers were employed in demolishing the fortifications and all public buildings not required for the accommodation of the troops. By 2nd September the trenches and batteries had been levelled, and detachments were sent to Barahmahal, but the remainder under Lieut. Dowse remained to destroy all the fortifications, and on 15th June, 1794, the latter reported that the ditch had been filled, and the ramparts levelled, so that a body of Horse could charge into the place.

1794.

About the end of July, the Pioneers under Lieut. Dowse marched into the Barahmahal, for the purpose of dismantling several of the hill forts in that district, which had been ceded by Tipu at the peace in 1792.

1795. **Second War with the Dutch, 1795-96.**—In July, 1795, two expeditions sailed from Madras against the Dutch settlements, viz., one under Colonel James Stuart* of H.M.'s service, against those in Ceylon; and the other under Major Archibald Brown of the Madras Army, against that in Malacca.

Two companies of Pioneers under Lieut. Dowse accompanied the former, and one company under Lieut. Heitland sailed with the latter. The detachment in Ceylon was present at the reduction of Trincomali and Fort Ostenburgh in August and at the capitulation of Jaffnapatam in September. Shortly afterwards it was joined by two companies from the Barahmahal.

The company under Lieut. Heitland was present at the surrender of the Fort at Malacca on the 18th August.

1796. The detachment under Lieut. Dowse was present at the

* Commanded the Madras Army from 1801 to 1804. "

capitulation of Colombo on the 15th February, 1796, which was followed soon afterwards by the submission of the whole Island. Early in 1797 the Pioneers were ordered back to Madras, but at the earnest solicitation of Major-General Welbore Ellis Doyle, then commanding the Island, and who represented that the services of a detachment of Pioneers were indispensable, a party of 50 were allowed to remain and appear to have done duty in Ceylon until 1802 when it became a colony of the Crown after the peace of Amiens. 1796.

On the 6th January 1796 Lieut. Heitland, with half his company sailed for Amboyna with Admiral Rainer's squadron as part of the Madras detachment, commanded by Major Urban Vigers of that army. The rest of the company remained in garrison at Malacca. Amboyna was taken in February, and the squadron then sailed for Banda-Neira, and the other Spice Islands, all of which were taken possession of without opposition. Two companies of Pioneers remained in the Moluccas until the peace with the Dutch in 1802.

In March, 1797, Government, in consideration of the readiness with which the Native Troops had volunteered for foreign service in Ceylon and to the eastward, issued an order, from which the following is an extract, granting certain allowances to the relatives of those sepoys who might be killed or die on that service:— 1797.

G.O.G. Fort St. George, 19th March 1797. "The Right Honorable the Governor in Council, who reflects with the highest satisfaction on the unexampled alacrity and spirit with which the coast Native troops have embarked for foreign service during the present war, is naturally led to consider every means of preserving that spirit and of rewarding that zeal; he has therefore been pleased to resolve—

1st. That a gratuity of three months' allowances (such as they have hitherto drawn on their family chits) shall be given to the relations of those sepoys who may be killed or die on service to the eastward, from the date of the account of the casualty being received at the station where the chit is paid.

2nd. That a gratuity of two months' allowances shall be given on the same terms to the relations of those sepoys who may be killed or die on service in the Island of Ceylon."

Lieut. Dowse was promoted to Brevet Captain on 1st April, 1797.

On the 26th August, 1797, 300 Pioneers embarked at Madras as part of the expedition under the command of Major-General Sir James Craig, K.B., which was intended to proceed against Manilla, but the design having been abandoned the troops were relanded a few days after their embarkation.

The Pioneers then marched to Arni, from which place a detachment of 200 men, under Lieut. Fitzpatrick, proceeded to the coast and embarked for service in Ceylon.

In October 1798, the Pioneers were employed on roadwork in the centre division, and in making boats for crossing the Palar river for the projected campaign against Tipu. 1798.

Honorary badges granted to the volunteers for the projected expedition against Manilla in 1797.—The readiness to volunteer again shown by the Native Troops on the occasion mentioned above, was recognised by Government in the following order:—

Fort St. George, 19th December 1798. "The Right Honourable the Governor in Council, impressed with a just sense of the zeal and ardour manifested by the Native Troops who volunteered for the projected expedition against Manilla, has caused badges to be prepared in commemoration of their spirit and attachment to the service. •

"His Lordship in Council has particular pleasure at this period in ordering the distribution of these honourable pledges, and they will accordingly be forwarded by the Military Board to the officers commanding corps for delivery to the commissioned, non-commissioned, and private volunteers.

"The officers commanding corps are desired to explain to the volunteers that merit, however obscure, can never be indifferent to a just and wise Government, and that the successors of those who have the present pleasure of bestowing these badges of distinction will feel an equal satisfaction in recognising in the descendants of the volunteers these testimonials of fidelity and worth."

Augmentation of the Corps.—During the same month it was directed that all the Pioneers then serving within the limits of the Presidency should be formed into eight companies, each of the undermentioned strength, viz :—

1 Sergeant, 1 Jemadar, 3 Havildars, 3 Naicks, 1 Pakhali, 100 Privates, and 1 Sergeant-Major as non-effective staff.

Early in 1799, in consequence of the war with Tipu, the corps was augmented to the following strength, viz :—

2 Captains, 1 Captain Lieutenant, 1 Lieutenant, 1 Assistant Surgeon, 1 Sergeant-Major, 10 Sergeants, 11 Jemadars, 30 Havildars, 30 Naicks, 1,000 Privates, and 10 Pakhalis.

Third War with Tipu Sultan, 1799.—The Corps under Captain W. Dowse, with Lieut. M.H. Cormick, M.L., and Lieut. W. Davies, M.L., the 2 latter officers having been appointed to the Pioneers on 11th (December, 1798) marched in February, 1799, with the army under General Harris, and was present at the battle of Malvalli on the 27th of March. During the siege of Seringapatam the Corps was placed under the direction of Colonel Gent, the senior officer of Engineers, and was employed in constructing batteries and parallels, and in the various operations which terminated in the storm and capture of the fortress on the 4th May; the casualties during the siege being Lieut. Cormick and 8 men killed, and 37 wounded. As soon as the place was captured, all the Pioneers were employed in burying the dead.

The following is an extract from Despatches, G.O.C.C., dated 5th May, 1799 :—

"In thus publicly expressing his sense of their good conduct, the Commander-in-Chief feels himself called upon to notice, in a most particular manner, the exertion of Captain Dowse and his Corps of Pioneers, which, during the present service, has been equally marked by unremitting labour, and the ability with which that labour was applied."

The honour "SERINGAPATAM" was granted to the Corps for this campaign.

During the siege of Seringapatam, 24 Pioneers under a Sergeant accompanied Lieut.Col. Read's detachment which was employed in reducing the country north of Rayakottai; Colonel Read took Sulagiri by storm, and Peddanaik Droog capitulated.

Lieut. Bagshawe with 106 Pioneers was with the force under Lieut.-Col. A. Brown which marched from Trichinopoly towards Coimbatore, and reduced Karur on 5th April, and Aravakurchi on 10th, after which it joined Col. Read.

Dhundiah Waugh, a freebooter, who was found in irons at Seringapatam, was released on the capture of that place, and at once gathering adherents round him, he laid the country near Bednore under the most exacting contributions. Lieut.-Col. Dalrymple moved from Chitaldroog against him on the 21st July, and driving him across the Tungabhadra, captured Harihar on 30th; meanwhile Colonel Stevenson had advanced into the Bednore country, and on 31st July took

Shimoga by assault. Dalrymple crossed the Tungabhadra, in flood, by means of a bamboo and raw hide barge constructed by the Engineers and Pioneers, and found the fort of Honnali evacuated; Dhundiah was then driven into Mahratta country, and the British forces which had united, returned to cantonments. Towards the end of August, 1799, Captain John Malcolm was ordered to obtain possession of the fort of Manjarabad, (about 75 miles N.W. of Seringapatam); on the 8th September he sent for reinforcements, and Lieut. Davies with a detachment of Pioneers accompanied these reinforcements which left Seringapatam on 11th September; preparations were made for escalading the fort, and blowing in the gates, but it surrendered before action was taken.

Operations in Mysore against the Rajah of Bullum.—In April, 1800, a detachment of Pioneers accompanied a field force sent from Seringapatam by the Honorable Colonel Arthur Wellesley under the command of Lieut.-Colonel Montresor, H.M. 77th Regiment, and was present at the attack and capture of the stronghold of the Rajah of Bullum at Arakeri, two or three miles S. E. of Manjarabad, on the 30th idem. The country was a dense forest, and several ranges of strong barriers had to be overcome. Captain Onslow Grose, of the 2nd Battalion 2nd Regiment (20th Regiment M.N.I.), then doing duty with the Pioneers, was killed at one of the barriers, and was thus noticed in Colonel Montresor's report:—

"I trust I may be permitted to express a sentiment of gratitude and regret when I mention that gallant and meritorious officer, Captain Grose of the Pioneers, who unfortunately was killed early in the day in endeavoring to place some ladders at one of the barriers."

Colonel Wellesley, in his report to Army Head-quarters, wrote of Captain Grose as follows:—

"In Captain Grose, who was unfortunately killed, the Honorable Company have lost a gallant, active, and zealous officer, who will be lamented by his whole profession."

The troops engaged on this service received the thanks of the Commander-in-Chief and of Government, dated respectively 8th and 12th May, 1800.

Operations against Dhundiah 1800.—During May and the early part of June, Dhundiah had regained possession of a large portion of the country, and in June Colonel Wellesley marched against him with two Brigades of Cavalry, three Brigades of Infantry, and a body of Pioneers under Captain W. Heitland, M.I.

Wellesley was at Harihar on 16th June, but owing to a rise in the Tungabhadra the crossing was not completed till the 24th; 50 Pioneers preceded the park and heavy transport and attended to the road, 20 Pioneers moved with the 2nd Native Cavalry, whilst the remainder were with the advanced guard and with the main body, in proportions arranged by Captain Heitland.

The fort of Rane Bednore was taken by assault on the 27th, on which occasion Colonel Wellesley expressed himself as "much pleased with the conduct of Colonel Stevenson and Lieutenant-Colonel Monypenny, and the troops under their orders."

On 12th July Wellesley marched to Savanore, and here a redoubt was built on the bank of the Wurda; Wellesley left the Pioneers, 2 companies of infantry, and 4 guns to complete the redoubt, and when this was done one company of infantry remained as a garrison.

On the evening of the 14th July, the Fort of Koondgul was taken by storm after the troops had marched above 22 miles, and had been more than 12 hours under arms.

On the 26th of the same month the Fort of Dummul was taken. An extract from the order issued on that occasion is given below:—

1800.

Camp at Dummul, Saturday 26th July, 1800. "Colonel Wellesley cannot sufficiently express his satisfaction at the conduct of the troops engaged in the assault of Dummul this morning. His thanks are particularly due to * * * and to Captain Heitland and his corps of Pioneers."

The camp of Dhundiah, under the fort of Manowly on the River Malpurba, was surprised and cut to pieces on the 30th July, and on the 10th September he was finally defeated and killed at Konahgul; but neither Infantry nor Pioneers appear to have taken part in either of these two actions, which were fought by the Cavalry Brigade after forced marches.

All of the troops employed upon this service received the thanks, both of the Madras Government and of the Governor-General in Council, dated respectively 25th September and 24th December, 1800.

Increase of pay.—During this year, Government having instituted inquiries into the condition of the native soldiery, became satisfied that the rate of pay allowed "did not bear a just proportion to the expense of maintaining themselves and their families, nor to the duties attached to the profession of arms," and the matter was represented to the Governor-General, under whose authority the amount of pay was increased, the change having effect from the 1st July, 1800. The following is the scale then fixed for Pioneers:—

PIONEERS.								
Net pay per month, exclusive of stoppages for clothing.				Batta per day. in the field.			Remarks.	
		Pags.	F.	C.	Pags.	F.	C.	
Jemadar	...	7	...	...	...	3	...	* Or in lieu thereof one seer of rice per day when rice is issued.
Havildar	...	3	...	...	...	*1	40	
Naick	...	2	21	...	...	*1	40	
Pioneer	...	2	10	...	...	*1	...	

Jemadars of six years' standing to receive nine pagodas, and Jemadars of ten years' standing to receive twelve pagodas per mensem.

These rates were ordered to be "clear and exclusive of all stoppages for clothing, which will continue to be provided for as at present by issues of cash from the Public Treasury."

It was at the same time resolved that the "Native Officers and men, of whatever corps or ranks, who may lose a limb by wounds on actual service, shall be pensioned on the full pay of their respective ranks."

Operations in the Wynaad and in Malabar against the Pychy Rajah, 1800-01.—Early in 1800 a strong detachment under Captain W. Heitland, M.I., with Lieut. Davis, M.I., was assembled at Seringapatam, but the operations were postponed, and it did not move till late in the year, when Colonel Stevenson took command. The service was extremely severe and harassing, and was not concluded till May 1801, when Colonel Stevenson and the troops were thanked by Government. The Pioneers suffered much from fever contracted in the jungles, and a large proportion of them were unfit for duty for some time after their return to Seringapatam. Those who recovered in time were sent to the south under Captain Heitland to join the force under Colonel Agnew, then employed against the Poligars in Tinnevely.

1801.

Expedition to Egypt, 1800-02.—One company of the Corps consisting of a Captain, 1 Jemadar, 4 Sergeants, and 88 Rank and File sailed with the expedition in December, 1800. They reached Cosseir on 8th June, 1801, and in July marched to Kinneh. On the 31st August peace was signed with the French, and the company leaving Cairo in May, 1802, sailed from Suez on 25th of that month to return to India.

The force was thanked by the Governor General in Council, 8th February, 1802; and the honour, "EGYPT" was granted to the Corps in July 1802. The following is an extract from G.O.G. No. 23 of 14th January 1879:—"Her Majesty the Queen Empress of India, has been graciously pleased to permit the addition of the badge of "THE SPHINX" to the other devices and distinctions borne by the Madras "Queen's Own" Sappers and Miners, a detachment of that Corps having served in Egypt under Sir David Baird in 1801."

Expedition against the Poligars in Tinnevely, 1801.—Early in 1801, the Poligars in the district of Tinnevely broke out into rebellion, and a force of about 3,000 men, under the command of Major Colin Macaulay, the Resident at Travancore, was assembled at Kytar to act against them. A detachment of Pioneers under Captain E. B. Bagshaw, M.L., with Lieut. Gordon, was attached to this force. On the 31st March it arrived before the stronghold of the Poligars at Panjalamkurchi, which had been taken by Colonel Fullarton in 1783 as mentioned above. The fort was of mud, with walls about $12\frac{1}{2}$ feet high, surrounded by a thick hedge of thorns, but without any ditch. A breach which appeared practicable having been made, the troops advanced to the assault, but were repulsed* with heavy loss, viz: 4 officers and 49 men killed, and 13 officers and 254 men wounded. Of 120 men of H.M. 74th Regiment who composed part of the storming party only 46 escaped unhurt. After this failure the Pioneers were employed in raising breastworks and in strengthening the outposts of the camp. On the 21st May Lieut.-Colonel A. P. Agnew, the Adjutant-General, arrived to assume command, and the next day a strong reinforcement, of which Capt. Heitland with another detachment of Pioneers formed a part, joined the camp. On the morning of the 23rd the fort was assaulted and carried, but only after a severe struggle, in the course of which 4 officers, 19 Europeans, and 24 Natives were killed, and 5 officers, 76 Europeans, and 96 Natives wounded.

Three companies of the 9th were left with the Pioneers to destroy the fort. Colonel Agnew, in his report dated 25th May, 1801, remarks:—

"The behaviour of Captain Bagshaw, and his able arrangement of the Pioneers during the attack, attracted the particular notice of the Commanding Officers."

Active operations continued, and on 25th July, near Tricatanur, Captain Heitland was wounded. On 31st July the camp was at Sherevele, and an attempt was made to cut a broad road through the dense jungle towards the fort of Kalliakoyil; during this work they were continually attacked by the enemy, and the latter threw up works in front of the head of the cutting; the road work was continued up to 30th August by which time the fort of Kalliakoyil was still nearly a mile distant, and about $5\frac{1}{2}$ miles of road had been cut. The force then moved back to Ookur, and on 1st October, three columns advanced on Kalliakoyil by different routes, and it was captured without much resistance. The following is an extract from the despatch by Colonel Agnew on the conclusion of the operations:—

* This has been given in some detail as the place is little known even in India. The brave defenders, although only armed with pikes and indifferent fire-arms, repulsed European troops on more than one occasion.

1801. "The greater part of the Poligar country was then a dense forest, and the labour undergone by the Pioneers and auxiliary working parties was extremely severe, and frequently performed under fire."

The following is an extract from the order issued by Government on the termination of the service:—

"The whole course of operations connected with that service has been distinguished by a spirit of animated bravery and persevering exertion which has merited the warmest approbation of the Governor in Council, and His Lordship in Council in bestowing upon the officers and troops the applause due to their conduct, reflects with the greatest satisfaction on the advantages which have been derived to the public interests by the suppression of a confederacy which threatened the most injurious consequences to the tranquillity of the British possessions."

Operations in the Moluccas, 1801.—In February 1801, a small force mainly composed of the Madras European regiment, and with which 21 Pioneers under Lieut. Wissett went, was sent by Colonel Burr commanding in the Moluccas, to capture Ternate; the force landed and attacking the fort of Telooke, the Pioneers carrying the scaling ladders, but the assault was unsuccessful, and the force re-embarked; a stronger expedition was despatched from Amboyna in April, and by May had captured the whole island.

1802. **Second Operations in Mysore against the Rajah of Bullum, 1802.**—On 5th January 1802, Captain W. Heitland, M.I., with Lieut. Davis, and a detachment of Pioneers marched from Seringapatam with the force under Colonel Wellesley, against the Rajah of Bullum who had again become refractory, and on 16th the fort of Arakeri was attacked and captured. Captain Heitland and the Pioneers were thanked in an order of the day from which the following is an extract:—

"In the performance of this service I have had every reason to be satisfied with the zeal, alacrity, and good conduct of all. My acknowledgments are, however, particularly due to * * * and to Captain Heitland and his Pioneers."

The country in the neighbourhood of Arakeri being thick forest, and every village being fortified, Colonel Wellesley left a strong detachment on the spot for the purpose of protecting the Pioneers under Captain Heitland and Lieutenant Davis, who were directed to fill up the ditches and destroy the fortifications of the villages, to open roads through the forest, and also down the several passes leading into Malabar, viz: the Bisli, Seisul, Sampagi, and Subramani Ghats. The fortifications of 25 villages appear to have been demolished on this occasion.

1803. Early in 1803 the corps was further augmented, and reorganised in accordance with G.O.G. dated 28th January 1803.

"The present establishment of 14 companies of Pioneers to be increased to 16 companies, and to be formed into two separate battalions, each battalion to consist of eight companies, and each company to consist of the present strength, viz:—

1 Jemadar, 3 Havildars, 3 Naicks, 1 Pakhali, and 100 Privates."

On this occasion, the Commander-in-Chief remarked that "the services of the Pioneers in this country always repay their expenses in war by the additional facility which they give to the movements of an army, and in peace by the useful labour which they perform. They have completed a number of useful works since their formation, filled up ditches and levelled walls at Seringapatam, formed roads in Barahmahal, Southern Division, Ceded Districts, and Mysore."

The following officers were appointed—

1st Battalion.—Captain W. P. Heitland, 6th N.I. Commanding, Captain John Brown, 7th N.I., Captain William Davis, 4th N.I. Lieut. Barclay, 5th N.I.

2nd Battalion.—Captain John Fitzpatrick, 9th N.I. Commanding, Captain E. B. Bagshaw, 10th N.I., Lieut. Grant, 12th N.I.

The new formations were completed by March, by which time the companies were distributed in the following manner:—

1st Battalion in camp.—6th Company with the Hyderabad Subsidiary Force.

2nd Battalion in camp.—1st Company with the Hyderabad Subsidiary Force. 3rd Company at Lalacca in the Molucca Islands.

Operations in Ceylon in 1803.—A detachment of Pioneers accompanied General MacDowell's force which occupied Kandy, after an inconsiderable resistance.

First Mahratta War, 1803-04.—The Corps was actively engaged throughout the war; 653 serving under General Wellesley, and 202 under Colonel Stevenson, the officers engaged being Captain W. Heitland Commanding, Captains Brown and Davis, and Lieut. Barclay. The detachments were present at the different sieges and actions in which their respective forces were engaged, viz:—

The siege and capture of Ahmadnagar from 8th to 12th August, when the Corps lost 1 man killed, and 15 wounded; Captain Heitland was mentioned in General Wellesley's despatches on this occasion, and G.O.G.G. dated Fort William 8th September, 1803, contains the following:—

“The Governor General in council has remarked with particular approbation the conduct of x x x x and of Captain Heitland of the Pioneers.”

On 31st August at Bamungaum the Pioneers constructed some field works in which it was intended to leave the 18th N.I. and heavy guns, etc., but intelligence received later altered Wellesley's plans, and when the force moved on the 2nd September the Pioneers and two companies of N.I. were left to level the new works, and to overtake the force on completion.

At the battle of Assaye on 23rd September, Major-General Wellesley with only 4500 men, of which one Cavalry and two Infantry Regiments were British, found the whole of Scindia's army, 40,000 strong, drawn up north of the Kaitna river, their left resting on the village of Assaye, on the Jewah river. He attacked at once with all his Artillery and Infantry including the Pioneers, whilst his Cavalry repelled the attacks of the Mahratta Horse. The enemy were routed by the small force of disciplined troops, and driven across the Jewah, and before they could reassemble the British and Madras Cavalry charged, and they were utterly dispersed. They left 1200 dead on the field, whilst 98 guns and a number of standards were captured by the victors; the Pioneers lost 20 killed and 51 wounded, and Captain Heitland had his horse shot under him.

The capture of the pettah of Asirgarh on 18th October, and the surrender of the fortress on the 19th.

The battle of Argaum on 29th November, and the siege and capture of Gawilgarh in December. The following is an extract from Major-General Wellesley's report of the siege of Gawilghur, dated 15th December:—

“In the performance of this service all the good qualities of British troops have been conspicuous to a degree which I have seldom witnessed. In bringing on their ordnance and stores to the point of attack, the troops of Colonel Stevenson's division performed the most laborious

1803. work with a zeal for the service, and patience and perseverance never surpassed; and when opposed to the enemy their conduct showed the same gallant spirit that has carried the British troops through so many difficulties in the course of this war.”
- * * * *

“Captain Heitland of the Pioneers and Captain Johnson of the Bombay Engineers are also entitled to my acknowledgments.

The two latter were sent from my division to assist Colonel Stevenson.”

For this campaign, the Honour “ASSAYE” was granted to the Corps.

Operations in Cuttack, 1803.—A force of nearly 5000 men moved in September 1803, under Lt. Colonel Harcourt, the Military Secretary to the Governor General, to occupy the mountainous district of Cuttack, and a detachment of Pioneers under Lt. Sheppard, M.E., formed part of this force. Marching on the 8th, Ahmadpur, was reached on 24th after experiencing great difficulties owing to the inundated state of the country, whilst the advanced guard was frequently annoyed by the enemy. Vigorous resistance was met at Mukundpur on 4th October, and on the 14th the fort of Barbatti about 1 mile from Cuttack was taken by storm, the capture of this fort being followed by the submission of the whole province.

The Government had not approved of the appointment of Lieut. Sheppard to command the detachment of Pioneers, but it was confirmed after Colonel Harcourt had submitted the following letter on 22nd October:—

“Upon my honour that the services I have experienced from the Pioneers under the zealous and efficient exertions of Lieut. Sheppard have greatly contributed to my early success in this province. Without the Pioneers under an active superior officer, I do not think it would have been practicable for me to have brought up the 12 prs. and my heavy stores; and as yet I have much need of the continuance of their services in bringing up the remainder of the heavy guns, and in attending the detachments it will be necessary to send out to completely settle the country. I intend to employ the Pioneers in opening a direct communication with the Barahmahal pass where I intend to establish a post to command the pass, it being the only practicable road from Nagpur, etc., to Cuttack.”

Operations in the Wynaad 1803.—In December 1803, the 2nd Battalion of the Pioneers served with a force under Colonel John Montresor in the Wynaad; between the 9th and 15th of that month there were various small engagements at Chunveratta, Naduvenaad, and Chavacheri, one Pioneer being wounded.

1804. **Operations in Javadi Hills and Chittur, 1804-05.**—In August 1804, the same battalion was employed under Lieut. Col. Darley in an attack on the Pollams of Polur Droog, among the Javadi hills, when the Pioneers lost one killed and one wounded. They were also present at the capture of the fort of Bunjari on 27th August. In December of the same year they were engaged with a detachment under Lieut. Col. Money Penny against the Poligars of Chittur, which lasted till March 1805.

Provision for the families of the Native soldiery killed in action.—On the 3rd September 1804, Government determined that provision should be made for the families of native officers and soldiers killed in action, and the following order was issued accordingly:—

“1st. The half pay of his rank shall be allowed to the nearest heir of every native officer and soldier of Cavalry, Infantry, Pioneers, and Gun Lascars who has died in battle, or in consequence of wounds received during the late war against the Mahratta confederates.

"2nd. In cases where the families of the deceased officers and soldiers may consist only of women and aged persons, the provision shall be continued during the life of the nearest heir of the family."

Operations against Chandore and Gahnah.—200 Pioneers were with the Peishwa's subsidiary force under the command of Lieut. Col. Wallace, and were engaged in the reduction of the hill forts of Chandore and Gahnah on 10th and 26th October 1804.

On 22nd January 1805, Captain Bagshaw was appointed to the command of the 1st Battalion of Pioneers *vice* Captain Heitland. 1805.

Operations in Khandeish and Berar.—In February 1805, a brigade under Lieut. Col. Colman, of which a detachment of Pioneers formed a part, was sent from Hyderabad to join the Poona Subsidiary Force under Colonel Wallace at Ahmadnagar. A detachment was also employed during this year on field service with Colonel Doveton's Force in Khandeish and in Berar.

In January 1806, Captain Bagshaw asked that the sick with him might have field allowances, in consideration of their having suffered much in Kotiote and Wynaad; a short time before this a detachment of the 1st Pioneers, 112 strong were ordered to march into the Wynaad to join Lieut. Blakiston to furnish all the posts and buildings required in Wynaad; so as to give him at all times 300 for duty. Whilst in the Wynaad, Lieut. Blakiston was detailed to command one of three columns that were to endeavour to seize one of the prescribed rebels. 1806.

On the 11th March 1806, the following G.O.G. was issued:—

"The Right Honourable the Governor in Council is pleased to direct that the Corps of Pioneers attached to the army under this Presidency, in consequence of the laborious duties which this corps is frequently called upon to execute, shall at all times be considered entitled to the following allowances, viz:—The European officers to the difference between their half and full batta, the European non-commissioned officers to their net dry batta according to the regulations, and the Native commissioned, non-commissioned, and privates to the full batta of their ranks respectively."

Up to April 1806, one company of Pioneers had remained under the orders of Colonel Wallace at Poona, but on 5th of that month the company was directed to march with three battalions of Infantry *via* Harihar to Chitaldroog, where they would receive further orders from Head Quarters.

In June 1806, it was decided that Captains commanding battalions of Pioneers should draw the batta of a Major, but they were to cease to draw the additional pay of Pioneer officers.

War in Travancore, 1809.—Owing to an insurrection in Travancore at the end of December 1808, four columns were detailed for field service there. Lieut.-Colonel A. St. Leger, of the 6th Madras Light Cavalry, was placed in command of a force of all arms, which was to advance from the east, and 400 Pioneers under Captain Smithwaite, with Lieuts. Bertram and Patterson accompanied this force. The column moved from Trichinopoly *via* Palamcottah, and on the 6th February took up a position within five miles of the Arambuli Lines. These formed the northern portion of the Travancore Lines which extended from Cape Comorin to the range of hills that separates Travancore from Madras. It was decided to attack the southern of the two redoubts covering the entrance through the Arambuli Lines, and the hill was ascended by night and the wall actually escaladed before the enemy discovered the attack, although it had taken six hours hard scrambling to get up the hill before the foot of the wall was reached. Lieut. Bertram with a detachment of Pioneers accompanied the escalading party, and also formed a part of the storming 1809.

1839. party, which immediately afterwards stormed the main lines; the enemy then abandoned the northern redoubt, and the force camped two miles beyond the Arambuli gate. This service was acknowledged by Government in the following order:—

Fort St. George, 16th February 1809.—“The Honourable the Governor in Council has the greatest satisfaction in publishing in General Orders the following extracts of letters received from the Honourable Lieutenant-Colonel St. Leger, announcing the decisive and distinguished success which attended the storm of the lines of Travancore by the troops under the command of that officer:—

* * * * *

“It is impossible for me to convey in language sufficiently strong the obligations I feel under to the personal exertions of Major Welsh, commanding 3rd Regiment Native Infantry, and the detachment for escalade under his command.”

* * * * *

“I feel it a duty I owe (from the report of Major Welsh) to the Pioneers who accompanied him, to express my entire approbation of their conduct, and that of Lieutenant Bertram who commanded them.”

“The Governor in Council considers the execution of the above service to reflect equal honor on the judgment with it was planned, and on the signal zeal and bravery with which it was carried into effect. The Governor in Council accordingly conveys to the Honourable Lieutenant-Colonel St. Leger the expression of his warmest approbation and thanks, and Lieutenant-Colonel St. Leger is requested to make known to the officers and troops under his command, particularly to Major Welsh, who gallantly and ably conducted the party employed in the assault, and to the other officers mentioned by Lieutenant-Colonel St. Leger, the sentiments of cordial approbation due to their meritorious conduct.”

The Pioneers were employed to destroy the works on both sides of the gate of the Arambuli Lines, but the gate and its immediate defences were left as a post to cover the communications.

On 17th February the column advanced into Travancore, and six miles further on found 6000 of the enemy in a strong position; but they were soon routed with the loss of nine guns, and the force took possession of the fortified villages of Kotar and Nagarkoyil, and encamped four miles beyond the latter. One company of Pioneers was engaged in this action, and Lieutenant Patterson in command of this company was thanked for his services.

The following is an extract from Colonel St. Leger's report on the occasion:—

“Their lines were attacked at daylight under a heavy fire from the battery, and from guns which opened in all directions, and were gallantly carried after a sharp action. The village, which is one of the largest and finest I have seen in India, was completely scoured, and the enemy forced to retreat in great confusion, protected in a great measure by the strength of the country in their rear.

“I cannot sufficiently dwell on the judgment displayed by Lieut.-Col. Macleod in the form of attack, and gallantry of its execution, which must ever reflect on himself the highest credit, and on the detachment under his command.”

Colonel St. Leger then marched to Trivandram, but met no further resistance; a junction was effected with the other columns, and the war terminated.

In May 1809 the following complimentary order was issued regarding the conduct of a Madras force assembled at Bombay under

the orders of Brigadier-General Sir John Malcolm for an intended expedition to the Persian Gulf :— 1809.

Fort St. George, 20th May 1809.—“The Honourable the Governor in Council has much satisfaction in publishing to the Army of this Presidency the following letter from Brigadier-General Malcolm, late Envoy to the Court of Persia, containing an honourable testimony of the conduct of the officers and men belonging to this establishment, composing part of the force lately assembled at Bombay under the Brigadier's command :—

“To the Honourable Sir George Barlow, *Bart.*,
Governor in Council,
Fort St. George.

“Sir.—I consider it an act of justice towards the different details of this Presidency which composed part of the force assembled under my orders at Bombay, to report their meritorious and exemplary conduct during their stay on that Island.

“These details amounted to near 1,000 men, and the officers with them were about 50, and it will, I trust, be considered as highly honourable to the character of the Coast Army, that during five months that this party of troops were encamped near the populous town of Bombay I had not one complaint against them from any officer of police, or from any of the authorities under Government, nor had I occasion to pass a censure on the conduct of any one officer, or to notice the occurrence of the slightest difference or contention between any of the individuals of the detachment during the whole of that period.

“I trust I shall be pardoned stating the obligation I feel towards Major Russell, Captain Showers, Captain Poignand, and Captain Fitzpatrick,* who commanded the different details of Cavalry, Artillery, Horse Artillery, and Pioneers under my orders.

* * * *

(Signed) JOHN MALCOLM,

MADRAS, 19TH MAY, 1809.”

Brig.-Genl.

“In consideration of the expenses to which the troops above alluded to were exposed while under orders for foreign service at Bombay, the Governor in Council has been pleased to resolve that the officers and men of all the details, European and Native, and also the public followers, shall be allowed one month's full batta after their arrival at their respective destinations, independently of that to which they may be entitled for marching thither.

“The Governor in Council, adverting to the alacrity with which the several details composing the force proceeded on the service in question, has been pleased to confer upon the Native officers and soldiers HONORARY BADGES to be worn as a mark of distinction, and as a proof of the sense entertained by the Governor in Council of their attachment to the service, and of their meritorious conduct while absent from their own establishment.”

In the month of June the establishment of each battalion of Pioneers was fixed at 700 Privates.

Field Force in Berar.—In November the force assembled at Ashti under Colonel Barry Close for service in the Nagpore territories then invaded by Amir Khan, was formed into two Brigades of Cavalry and three Brigades of Infantry; a body of Pioneers under Captain Bowes was attached. This force occupied Seronge in March 1810, and remained in the field until May, when Colonel Close returned to Hyderabad, leaving one brigade to watch the Berar frontier, and with this brigade one company of Pioneers remained. 1810.

* Commanding three Companies of Pioneers.

Expedition to Bourbon, 1810.—Early in the year an expedition was organised at Madras against the Island of Bourbon, and on the 23rd March, Major-General Gowdie commanding the army, reported to the Governor-General that the number of native troops who had volunteered amounted to about 7,000 men, being nearly three times the number required, and he at the same time recommended the officers and men, amongst whom were Captain Smithwaite and the Pioneers, to favourable notice, in consequence of which the following order was issued:—

Fort St. George, 6th April 1810.—“The Right Honourable the Governor-General in Council is happy to observe by the following extract from a letter from the Officer Commanding-in-Chief that the confidence in the attachment and discipline of the Native Army under this Presidency, which was manifested by the recent determination of the Government to employ a respectable detachment from it upon foreign service has been fully justified by the alacrity and ardour with which not only the troops selected for that duty, but several other corps, have volunteered for foreign service; and His Lordship requests that Major-General Gowdie will convey to the whole of these troops the expression of his warm approbation of the zeal, fidelity, and military spirit by which their conduct has been distinguished on this important occasion.

“The Right Honourable the Governor-General in Council is happy to avail himself of this opportunity of expressing his fullest approbation of the meritorious and zealous exertions on this occasion of the officers whose names have been brought to his notice by Major-General Gowdie.”

On 8th May, a detachment of 200 Pioneers under Lieutenant Scouler embarked at Quilon as part of the expedition, and was present at the capitulation of St. Denis and the surrender of the Island of Bourbon on the 8th July. Lieutenant-Colonel Hastings Fraser commanding the first brigade, in his report of the surrender, dated 9th July, mentions Lieutenant Scouler of the Pioneers as having rendered him the most essential service.

Lieutenant Scouler's detachment, and another that had left Madras in August under Lieutenant Swanston, were present at the surrender of Port Louis and the Isle de France on 2nd December. After the capitulation, Lieutenant Swanston was appointed to make a military survey of the Island, including soundings of its harbours and coast. He finished this work in August 1812, and the Duke of York, at that time Commander-in-Chief of the British Army, recommended him in the strongest manner to the Court of Directors.

The force was thanked by the Governor-General in Council on 11th February 1812, and the Madras Native Regiments received the Honour of “Bourbon,” but this was not conferred on the Pioneers, as only 200 of them were engaged in the operations on that Island.

The native troops which formed part of the expedition against the French Islands in 1810, having returned to their Presidency early in 1812, the following order was issued shortly after their arrival:—

Fort St. George, 11th February 1812. “The whole of the native troops employed in the late expedition against the Islands of Bourbon and Mauritius having returned to Fort St. George, the Honourable the Governor in Council performs a satisfactory part of his duty in requesting that His Excellency the Commander-in-Chief will be pleased to convey to the several native corps and detachments which served at the conquest of those Islands, the public thanks of the Government for the alacrity with which they embarked on that service, for the gallantry which they displayed when opposed to the enemy, and for

their uniform good conduct on all occasions during the period of their 1810. absence from the coast."

Revision of Establishment.—Under G.O.G. of 12th October 1810, the establishment of a battalion of Pioneers was fixed as follows :—

Captains	...	3	Havildars	...	24
Subalterns	...	4	Pakhalis	...	9
Assistant Surgeon	...	1	Naicks	...	24
Jemadars	...	8	Privates	...	700
Sergeant-Major	...	1			

Attached to the Battalion.

Maistry-Bricklayers	...	2	Carpenters	...	4
Stone-cutters	...	3	Smiths	...	4
Sawyers	...	3	Hammermen	...	4
Conicopolies	...	2	Bellows boys	...	4
Vakeel	...	1	Native Dressers	...	2
Maistry	...	1	Toties	...	2

The Sergeants attached to battalions of Pioneers do not appear in this order, but they were apparently retained, as they are shewn in the tables of pay published in 1818. (page 29).

Expedition to Java, 1811.—On 18th April, 300 men under 1811. Captain T. Smithwaite, with Captain R. McCraith, Lieuts. Shepherd and Stuart, and Ensign McLeod sailed from Madras with the expedition against Java; they reached Penang on 18th May, and sailing again on 24th reached Malacca on 1st June, and the coast of Java on 4th August, and the landing commenced that day in the Maronde River. The expedition was under the command of Sir S. Auchmuty, and comprised 5344 Europeans and 6616 Natives, but of these 1200 had been left sick at Malacca and 1500 more were sick when they landed in Java; by the evening of the 4th all the Infantry and their guns had landed, and advanced posts were pushed out two miles, one line facing Batavia, and one facing Cornelis. The Pioneers were present at the action near Wettervreden on 11th August, and Colonel Gillespie said in his despatch on this action :—

"I have also to thank x x x and Captains Smithwaite and McCraith of the Madras Pioneers for their support during the affair."

They were also engaged at the siege of Cornelis from 14th to 26th August; Lieut. Shepherd was killed and Ensign McLeod mortally wounded on 22nd August, when the enemy made a sortie. In the assault on 26th, four columns were detailed to attack, the rifle company of H.M. 14th led the 1st column, followed by a detachment of Pioneers under Captain Smithwaite, and the 4th column was headed by a detachment of Pioneers. In this assault, the enemy who numbered 13,000, lost 1,500 killed, and 6,000 wounded and prisoners, our loss being only 643. 280 guns were captured in the fort of Cornelis. 200 Pioneers were also present at the action at Yattoo on 12th September, which resulted in the submission of the island.

On the conclusion of the war, a detachment was left in Java under the command of Lieut. Stuart. Of them, the Commander-in-Chief in Java reported that he had "equal pleasure in recording his sense of the conduct of the detachment commanded by Lieut. Stuart, who have been uniformly distinguished by a zeal and steadiness and patient enduring under trying circumstances, which have rendered their services eminently useful, and themselves deserving of particular regard and consideration."

When this detachment left for Madras, four N.C.O.'s remained in Java to assist in forming a Colonial Corps of Pioneers.

The following is a copy of the order of the Commander-in-Chief conveying to the troops the thanks of His Royal Highness the Prince Regent for their services during the expedition :—

Head Quarters, Choultry Plain, 23rd May 1812. "Lieutenant-General Sir Samuel Auchmuty has it in command from His Royal Highness the Prince Regent to convey in Public Orders, and in the strongest terms, to the troops who achieved the conquest of Java, His Royal Highness' approbation of the distinguished gallantry and spirit displayed by them during a succession of the most brilliant operations, and in particular on the 26th August, when the enemy's entrenchments were assaulted and carried, and their army defeated and destroyed.

"In communicating so gratifying an acknowledgment of their valuable services, the Lieutenant-General is convinced that the army it was his good fortune to command will justly appreciate the distinguished honour conferred on them by His Royal Highness' gracious approbation.

"The marks of Royal approbation bestowed on their leaders are a source of pride and gratification to every rank in well-conducted armies. With this impression the Lieutenant-General cannot refuse the assailants at Cornelis the satisfaction of knowing that His Royal Highness the Prince Regent has graciously announced his intention or bestowing medals on the superior officers of His Majesty's and the Honourable Company's Forces who distinguished themselves on the memorable service."

Operations in the Southern Mahratta Country, 1812.—In August 1812, a force was assembled at Bellary under Lieut.-Col. Dowse, (who had previously commanded the Pioneers), for field service in the Southern Mahratta country, consisting of a detachment of Artillery, the 1st Battalion H.M. 56th Regiment, 1st Battalion 22nd Regiment Native Infantry, 1st Battalion 24th Regiment Native Infantry, and a detachment of Pioneers. This force continued in the field until May 1814, when it returned into the Madras Presidency with the thanks of the Resident at Poona, and the approbation of the Governor-General in Council conveyed in a letter dated Fort William, 20th May 1814.

Recruit and Pension Boys attached to the Battalions of Pioneers.—Under G.O.G. of the 23rd February 1813, new regulations for the Recruit establishments attached to corps were published, and on that occasion Recruit and Pension Boys appear to have been allowed to the corps of Pioneers for the first time. The number fixed for each battalion was 30 Recruit and 30 Pension Boys, who were to be entertained in conformity with the following rules :—

Recruit Boys were to be chosen from the sons or near relatives of old soldiers; they were not to be entertained under the age of eleven years, and if not fit for transfer to the ranks at the age of eighteen they were to be discharged. Their pay was fixed at one Star Pagoda (about seven shillings) per mensem, until dismissed from drill and fit to take their tour of common duties, when they were to be transferred to the effective establishment of the corps to which they belonged, and were entitled from that time to the pay, clothing, and all other allowances of effective soldiers.

Pension Boys were admissible at any age. They were to be selected from among the sons of deceased native officers and soldiers, but in the absence of any children of that description, then the sons of native officers and soldiers who might have large families without adequate means of maintaining them were to be considered eligible. Pensioned boys on attaining the age of eleven years were, if fit, to be transferred to the establishment of Recruit Boys, and if not fit for such

transfer at the age of 14 years, then to be discharged. The pay of 1813.
Pension Boys was the same as that of the Recruit Boys.

Revision of the establishment of European Officers.—Under G.O.G. of the 3rd November 1813 the establishment of European officers fixed in October 1810 for a battalion of Pioneers of eight companies was revised, and ordered to consist of two Captains, six Subalterns, and one Assistant Surgeon.

In December 1814 an Adjutant was allowed for each battalion of 1814.
Pioneers, and these appointments having been conferred on Subalterns serving with the corps, an additional Subaltern was posted to each battalion.

During the same month a strong body of Pioneers, was attached to a force assembled under Lieutenant-Colonel Thompson for service in Ceylon, but the rebellion in that Island having been suppressed before the embarkation of the force, it was broken up in January 1815.

Early in 1815 two companies were employed with the Hyderabad 1815.
Subsidiary Force under Colonel Doveton, then in advance near Ellichpoor. An army of reserve, to which a body of Pioneers was attached, was formed at this time, and the Commander-in-Chief assumed command of it on the 31st March, but the force was broken up on the 25th April, being no longer required.

Operations against Kurnool.—In November a body of Pioneers was attached to the force assembled at Gooty under Colonel Marriott for service in Kurnool, and was present at the surrender of the fort at the town of that name on the 15th December. The force was broken up in June 1816, and an ordinary 1816.
garrison left in occupation of the district, on which occasion the following order was issued :—

Fort St. George, 29th June 1816.—“The Governor in Council takes the occasion of breaking up the force assembled for field service in Kurnool to publish in General Orders his entire satisfaction with the zeal and ability manifested by Colonel Marriott in all the operations of his late important charge. The exemplary conduct in every respect of the officers and soldiers who served under his command is also entitled to high commendation.”

The garrison remained in Kurnool until April 1817, when the British troops were withdrawn from that territory.

Second Mahratta War, 1817-19.—When the Mahratta war 1817.
broke out in 1817, 400 Pioneers were attached to the first division of the army of the Deccan under the personal command of Lieutenant-General Sir Thomas Hislop, Commander-in-Chief, 400 to the second division under Brigadier-General Doveton, and 400 to the reserve division commanded by Brigadier-General Thomas Munro.

The officers engaged were :—Capt. T. Smithwaite, Captain R. McCraith, Lieuts. Bevan, J. W. Nattes, and T. Davies.

Half of the first battalion marched from Secunderabad at the end of August 1817 with other troops to join the 1st division; on 20th September the other half battalion moved with other troops by way of Adjanta to Changdeo, to establish a crossing at the junction of the Purnah and the Tapti. On 23rd October the H.Q. and three companies of the second battalion moved from Bellary to join the Deccan Reserve, and by November all three parties had joined the forces to which they were allotted.

The Pioneers were present at the actions and sieges specified below, viz : Brigadier-General Lionel Smith's action at the Yelloura Ford near Poona on the 16th November 1817, where one Havildar and four Privates were wounded.

1817. The battle before the city of Nagpore on the 16th December, and the siege of that place from the 19th to the 30th idem, when it capitulated. One Jemadar and seven Privates were wounded during the siege.

During these last operations, an advance was being carried out along the bund of the Juma Talao, and the advance was somewhat delayed owing to the Pioneers, who could not be brought forward with materials to complete it, until the European Sappers and Miners had entrenched themselves. With regard to this incident, Lake in his "Sieges of the Madras Army" says:—"This is the only instance of misbehaviour of the Madras Pioneers, who have long been distinguished for their cool steady bravery; and on one or two trying occasions on which I had myself an opportunity of seeing them employed, they have sustained that character in a way that could not be surpassed by any troops in the world. The present case can only be accounted for by supposing that they were new to their work, unpractised, and unaccustomed to the Engineer officers under whom they were employed."

Extract from despatches, G.O.C.C. dated 22nd December, 1817. Despatch by General Doveton.

"I avail myself of this opportunity also of bringing to His Excellency the Commander-in-Chief's notice the exemplary conduct and exertions of the Corps of Sappers and Miners during the several operations against Nagpore. Had it not been for the uncommon exertions of Lieuts. Davies and Nattes, and of the men of this corps, we should never have been able to carry on our approaches in the rapid manner they were. Their consequent fatigue and exertions were therefore proportionately great, and prove to my entire conviction that this particular arm only requires an adequate increase to render the most essential service to the public interest."

The battle of Mahidpore on 21st December.

Their services on this occasion were acknowledged in G.O.C.C. dated 22nd December, 1817, as follows:—

"The conduct of the Pioneers under Captain McCraith was highly meritorious, and essentially useful."

A complimentary order was also issued by the Governor-General dated Camp at Oochar, 1st January 1818.

The relief of the fort at Nowlgond in December, by that part of the reserve division under the immediate command of Brigadier Thomas Munro, and the capture of the forts at Gadag, Dummul, and 1818. Hubli by the same officer in January 1818.

The assault and capture of the fortress of Badami on the 17th February by the same officer, on which occasion the conduct of the Pioneers was thus favorably noticed by the Commander-in-Chief:—

Head Quarters of the Army of the Deccan, Camp at Bijapur, Friday, 13th March, 1818.—"The expression of His Excellency the Commander-in-Chief's approbation and applause is also due to * * * and the detachment of Madras Pioneers, for the admirable spirit and coolness they evinced in the attack."

The assault on the fort at Talnair on the 27th February by the division under General Hislop, from whose order on the occasion the following is an extract:—

"The conduct of the Pioneers during the whole of their arduous duties in the attack of yesterday was such as to call forth the highest approbation of the Commander-in-Chief, and His Excellency offers to Captain McCraith, commanding the Pioneers, his warmest acknowledgments for his own distinguished and exemplary conduct, as well as to the whole of the officers, non-commissioned officers, and privates of the corps."

The capture of Singhur on 2nd March 1818 by the detachment under Brigadier-General Pritzler, which was thus acknowledged in General Orders by the Commander-in-Chief:—

“The fort of Singhur having surrendered to Brigadier-General Pritzler’s detachment on the 2nd instant, His Excellency the Commander-in-Chief congratulates that officer and the gallant troops under his command on the possession of so strong a fortress with so little loss.

* * * *

“The conduct of the Artillery, Pioneers, and troops in general was highly praiseworthy, and the Commander-in-Chief notices with much satisfaction the commendation which Brigadier-General Pritzler has bestowed on them for their zeal and cheerfulness on all occasions.”

The surrender of the forts of Jeypur, Vizirghar, and Purandar to the detachment under the same officer on the 12th, 15th, and 16th March respectively.

The surrender of Gokauk on the 9th March to the detachment of the reserve division under Brigadier-General Munro, and the siege of the fort of Belaum by the same detachment from the 20th March to the 10th April, on which day it capitulated.

The reduction of Wasota on the 7th April by Brigadier-General Pritzler’s detachment, which rejoined General Munro on the 22nd idem.

The capture of the hill fort of Unkye-Tunkye on the 3rd April, the siege at Rajdair on the 11th and 12th idem, and that of Trimbak on the 23rd and 24th, on the fall of which last-mentioned place, seventeen other hill forts in Khandeish surrendered without resistance.

The assault and capture of the pettah at Sholapore by the reserve division on the 10th May, and the siege operations at the same place from the 12th and to the 15th idem, when the garrison in the fort capitulated.

The surrender of Paughur to the same division on the 8th August, by which the reduction of the territories of the Peishwa was completed.

The siege of Chanda by the Nerbada division under Lieutenant-Colonel Adams, C.B., from the 10th to the 20th May, on which day the place was stormed and carried. The following is an extract from the order issued on the occasion by the Governor-General, dated at Goruckpore, 18th June 1818:—

“Lieutenant-Colonel Scot* of the Madras establishment, who guided the assault, displayed a courage no less calmly capable of perceiving and securing every advantage than it was brilliant. His success demonstrates how judiciously his valour was applied. He appears to have been worthily supported by the intrepidity of Lieutenant-Colonel Popham and Captain Brook, who led the right and left columns of attack. In noticing this part of the day’s achievement, the Governor-General should not forget the animated exertions of Lieutenants Bevan† and Fell,‡ commanding the Pioneers.”

* * * *

The following is an extract from G.O.C.C. dated 1st September 1818:—

His Excellency in detailing the names of x x x and Lieutenant Bevan of the Pioneers, and the corps to which they belong, is actuated by a desire to proclaim the honor they have acquired in

* Major-Gen. Sir R. Scot, K.C.B. | † Madras Pioneers, | ‡ Bengal Pioneers.

1818. the same orders that have commemorated the triumphs of their brother officers and soldiers."

The siege of the fort at Malligaum by the force under Lieutenant-Colonel A. McDowall from the 8th May to the 13th June, when the garrison surrendered. An attempt was made to carry the place by assault on the 29th May, but the breach was found impracticable. Lieutenant Nattes, of the Engineers, was mortally wounded after having mounted the breach at the head of the storming party. Lieutenant Davies and three Privates of the Pioneers were killed, and one Havildar, one Pakhali, one Naick, and 12 Privates wounded.

The surrender of the fort at Amulnair on the 30th November, to the detachment under Lieutenant-Colonel S. Huskisson, H.M. 67th Foot.

1819. A detachment of Pioneers was present at the siege of Jilpi Annair from 6th to 11th January 1819, and the following is an extract from the orders by General Doveton:—

"The Lieut.-Colonel having also brought to notice of the Brigadier-General the indefatigable zeal and activity displayed by Captain McCraith of the Pioneers, not only before Jilpi Annair itself, but also in preparing so excellent a road for the guns through the Dul Ghat, x x x he will have much pleasure in making his consequent report to superior authority."

Seventy Pioneers took part in the siege of Nowa, from 8th to 31st January, on which latter date the fort was stormed.

A detachment was present at the assault of the outwork at Rari in the Sawant Wari country on the 13th February by the force under Major-General Sir W. Grant Keir, on which occasion one Private was killed and one wounded.

Detachments were also present at the two sieges with which the war may be said to have terminated, viz: those of Asirghur and Kopaldroog. The siege of Asirghur commenced on the 17th March, and ended on the 9th April 1819. The pettah was carried by assault on the 18th March and preparations were made for storming the lower fort on the 29th, but it was evacuated during the night. The garrison of the upper fort surrendered on the 8th April, and the place was taken possession of the next day. One Havildar and 15 rank and file of the Pioneers were wounded during the operations.

In General Doveton's despatch after the capture of Asirghur, the following occurs:—

"The unceasing fatigue and uncommon exertions of the Corps of Pioneers, so cheerfully and unremittingly displayed, entitle Captain McCraith to the Brigadier-General's warmest thanks."

The siege of the hill fortress of Kopaldroog commenced on the night of the 8th May. The lower forts surrendered on the 11th and the upper fort was carried by assault on the 13th idem. Two Privates were killed and seven wounded out of 200 present.

General Pritzler reported:—"To Capt. Smithwaite and the Pioneers I feel much indebted for their unwearied exertions, constantly exposed to a heavy fire."

For this war the Corps received the Honours "NAGPUR" and "MAHIDPUR"

1818. **Establishment of a new currency.**—In January 1818 the currency of the Presidency was changed from pagodas, fanams, and cash, to rupees, annas, and pice, and new tables of pay and allowances were fixed for the several branches of the army. Those relating to the Corps of Pioneers are given below:—

TABLE OF PAY TO THE HONOURABLE COMPANY'S NATIVE PIONEERS.

1818.

			1 Day.			30 Days.			31 Days.			Non-effective Staff.			Allowance per mensem.		
			RS.	A.	P.	RS.	A.	P.	The same for every month.			Sergeant-Major Pay Havildar. Stationery for each company.			RS.	A.	P.
Sergeant ...	...	...	1	2	8	35	0	0							14	0	0
Jemadar ...	1st Class	...	1	6	4	42	0	0							1	13	10
Jemadar ...	2nd do.	...	1	0	9	31	8	0							2	5	4
Jemadar ...	3rd do.	...	0	13	0	24	8	0									
Havildar ...	...	...	0	5	7	19	8	0	The same for every month.			Sergeant-Major Pay Havildar. Stationery for each company.					
Naick ...	...	...	0	4	8	8	12	0									
Pioneer ...	...	...	0	1	2	7	13	4									
Vakeel ...	...	...	0	11	2	21	0	0									
Pakhali ...	...	...	0	5	8	19	11	10									

TABLE OF BATTALION TO PIONEERS.

—	1 Day.			30 Days.			31 Days.		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Jemadars, 1st, 2nd, or 3rd Class ...	0	3	8	7	0	0	7	3	8
Havildar or Naick ...	0	1	10	3	8	0	3	9	10
Pioneer ...	0	1	2	2	5	4	2	6	6
Vakeel ...	0	7	5	14	0	0	14	0	0
Pakhali ...	0	2	5	4	10	8	4	13	1

TABLE OF PAY TO INVALIDED AND PENSIONED PIONEERS.

—	Invalids.						Pensioners.					
	Day.			Month.			Day.			Month.		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Jemadar ... { 1st Class ...	1	6	4	42	0	0	0	11	2	21	0	0
Jemadar ... { 2nd do. ...	1	0	9	31	8	0	0	8	4	15	12	0
Jemadar ... { 3rd do. ...	0	13	0	24	8	0	0	6	6	12	4	0
Havildar ...	0	5	9	10	8	0	0	3	2	5	15	4
Naick ...	0	4	8	8	12	0	0	2	9	5	4	0
Pioneer ...	0	4	2	7	13	0	0	2	1	3	14	8

G.O.G. dated 24-3-1818, ordered the formation of a Corps of Sappers and Miners, consisting of one European and two Native companies to be officered from the Engineers, but the actual strength of the Corps never exceeded 50 Europeans, and 32 Natives, and it was disbanded in May 1821.

Revision of Establishment.—The establishment of each battalion of Pioneers was again revised during the year 1818 and fixed as follows:—

Captains ...	2	Jemadars ...	8
Lieutenants ...	5	Havildars ...	24
Ensign ...	1	Pakhalis ...	8
Adjutant ...	1	Naicks ...	24
Assistant Surgeon ...	1	Privates ...	700
Sergeant-Major ...	1		

Attached to the Battalion.

Recruit Boys ...	30	Stone-cutters ...	3
Pension Boys ...	30	Carpenters ...	4
Native Dressers ...	2	Smiths ...	4
Vakeel ...	1	Hammermen ...	4
Conicopolies ...	2	Bellows Boys ...	4
Maistry ...	1	Pakhalis ...	2
Do. Bricklayers ...	2	Toties ...	2

1819.

Suspension of recruiting for the Pioneers.—Soon after the

termination of the Mahratta war, recruiting for the Corps of Pioneers was suspended, and the battalions consequently fell considerably below their proper strength; but early in 1821, on the strong recommendation of Sir Thomas Munro for the reasons assigned in the following Minute, the Government resolved to keep the Corps complete:—

1821.

Minute by Sir Thomas Munro, dated 30th January, 1821. "The report of the Quartermaster-General, dated the 18th instant, exhibits in so clear and forcible a manner the useful services of the Corps of Pioneers, and the inconvenience that must result from any diminution of its strength, that I have no hesitation in recommending to the Board that the order for suspending the recruiting of that Corps be withdrawn, and it be kept complete.

It will be seen from the distribution statement transmitted by the Quartermaster-General that the greater part of the Pioneers are employed under the orders of the Supreme Government with the different subsidiary forces in advance, and that within our own frontier we have only two companies, the whole of which with the exception of the small party doing duty in the cantonment of Bangalore, are employed in opening the Periah Ghat between Mysore and Malabar.

We have no inland navigation, and the only communication therefore between the coast and the interior, whether for military or commercial purposes, are the different passes, which are at all times difficult and often impassable from want of timely repair. Had we no use for Pioneers with our armies, it would still be necessary to keep them up in order to repair these passes as public works essential to the trade of the country, for if we did not, we should be obliged to have recourse to common labourers, who, from their want of skill, would be much more expensive. But the services of the Pioneers are applicable not only to the important works of opening and repairing passes, but to the construction of roofs and temporary buildings at all our military stations, which would otherwise be executed at a greater expense by the Engineer Department. The Pioneers are at all times productive labourers. They are never idle, and as the work on which they are usually engaged could not be executed so cheaply by any other class of labourers, there would be no economy in reducing their number. The communications must be kept open between the countries on the east and west coast and those above the ghats; and if we have not Pioneers, it must be done by common labourers and the lower class of cultivators drawn together from a distance, and most frequently by compulsion, to work among unhealthy jungles where many of them lose their lives, and where their labour after all is much more expensive from their want of the necessary skill than that of Pioneers. Considerations therefore of humanity, as well as of economy urge the propriety of maintaining the Pioneer Corps at their full establishment."

(Signed) THOMAS MUNRO.

The Board concur in the opinion of the President on the useful services of the Corps of Pioneers, and on the inconvenience which would result from any diminution of its strength.

Resolved accordingly that the recruiting of the Pioneers, which was suspended on the 17th July 1819, be continued, and that the Corps be kept complete.

1824.

First war in Burmah, 1824-26.—Early in 1824, war was declared against the Government of Ava. The Government of India deciding to act mainly on the defensive on the Assam frontier, whilst an expedition under Sir A. Campbell, K.C.B., with both Madras and Bengal troops proceeded to Rangoon. The 1st Battalion of Pioneers sailed from Madras on 16th April, with the first division of the

Madras troops, its strength being 552 of all ranks :—

The officers were Captain W. Milne, (Commanding 1824). Captain Crowe, (Commanding 1825-26). Captain F. Wheeler, (wounded). Captain Moncrieffe, (wounded). Lieut. J. Marcartney, (wounded). Lieut. and Adjutant J. A. Campbell, (wounded twice). Lieut. J. Smith, (wounded). Ensign McLeod, (wounded).

The Madras and Bengal forces concentrated at Port Cornwallis in the Andamans, and leaving there on 5th May, commenced to land at Rangoon on 10th May, meeting only slight opposition.

The spirit by which this battalion, in common with the rest of the Madras Native Army was actuated, was brought to the notice of the Governor-General by Sir Thomas Munro in a letter dated 25th May 1824, from which the following is an extract :—

“We have got the Pioneers, whom I did not expect so soon ; they have been enabled to join only by very extraordinary exertion. A detachment of them from the neighbourhood of Hyderabad has marched at the rate of 25 miles daily for 15 days, without a halt, at the hottest time of the year. Our sepoy battalions have embarked without a man being absent. Their conduct has been highly meritorious ; no European could have evinced more readiness to go on foreign service than they have done.”

The battalion was engaged in the attack on the fortified camp and stockades at Kemmendine on the 10th and 11th June, and at the capture of the stockades near Dallah on the 8th July, when three were taken by the column under the immediate command of Sir Archibald Campbell, and seven by that under Brigadier-General McBean. These last were all taken by escalade, the Pioneers being very forward throughout, and advancing to place the ladders against the second large stockade without waiting for a covering party.

A party was employed with the detachment under Lieut.-Col. Kelly of the Madras* European Regiment, by which two stockades in the Dallah creek were taken on the 8th August.

On the 22nd September the stockades near Pagoda Point beyond Kemmendine were taken by a detachment under Brigadier-General H. Fraser, on which occasion the Pioneers were employed. General Fraser, in his report dated 27th September, speaks of the troops in the following terms :—

“Major Sale and all the officers and men, both Europeans and Natives, evinced the utmost zeal and spirit in the performance of every duty required from them, and endured their fatigues with the utmost cheerfulness. The native troops I beg particularly to notice, who, for the space of four days, had few opportunities of dressing any food.”

On the 5th October a detachment composed of 800 men, taken from the 3rd and 34th Regiments of Light Infantry, and 40 Pioneers under Captain Milne, were sent against Kyklu under Lieut.-Col. Smith, c.B. The stockade at Todagabe was carried by escalade the same day. On the evening of the 7th, after having stormed a succession of breast-works, the detachment came in front of the stockade at Kyklu, and being repulsed with some loss it fell back. Captain Moncrieffe and Lieutenant and Adjutant Campbell of the Pioneers were wounded on this occasion.

Colonel Smith in his despatch says :—

“The wounded were immediately collected, and through the indefatigable exertions of x x x and the zealous aid of Captain Milne of the Madras Pioneers in procuring the means of carriage for such men as could not be provided with doolies, I was enabled to move again at 2 a.m. x x x x I cannot too highly appreciate the services of x x x x

*Afterwards the Madras Fusiliers, now H.M. 102nd Regiment.

1824. and Captain Milne, whose judgment, bravery, and steadiness I had frequent opportunities of witnessing."

On the 9th October a reinforcement under Brigadier McCreagh was sent out, which occupied Kyklu without opposition, and then destroyed a large stockade and a village beyond it. The Pioneers were mentioned by Brigadier McCreagh in the following words:—"The effective exertions of the Madras Pioneers under Captain Milne attracted the notice of everyone."

On the 8th October Major Thomas Evans, H.M. 38th Regiment, was sent with a detachment against the fortified village of Thantabain, which was carried without loss. The following extract is taken from Major Evans' report:—"I cannot close my report without mentioning the very meritorious services of Brevet-Captain Wheeler and the detachment of Pioneers that accompanied me. Their prompt and ready zeal in situations of difficulty and danger was not less conspicuous than their indefatigable exertions in performing other parts of their laborious duty, and the very gallant style in which they repeatedly dashed forward with scaling ladders was as honourable to themselves as it was a gratifying mark of faith and confidence in the troops employed."

The Pioneers were engaged in the attacks on Bandula's army in front of Rangoon during the first week of December, which terminated in his defeat on the 7th idem.

The following is an extract from Sir Archibald Campbell's G.O.C.C. on the occasion, dated 8th December 1824:—

"The conduct of Captain Wheeler and the Madras Pioneers is justly a theme of praise to every officer they are placed under."

On the night of the 8th December a party of Pioneers accompanied a detachment under Major Ferrier of the 43rd Regiment Madras Native Infantry, which surprised the enemy at Dallah, driving them from their trenches and taking ten guns. The Pioneers had one Havildar and four men wounded in these affairs.

The battalion was engaged in the attack and capture of the strong stockades at Kokain on the 15th December, when the enemy were defeated with great loss. Captain Wheeler and Lieutenants Macartney and Campbell and one man of the Pioneers were wounded in this action.

The following is an extract from G.O.G.G. dated 24th December 1824:—

"The Governor-General in Council acknowledges with peculiar approbation the gallant and indefatigable exertions of that valuable Corps, the Madras Pioneers, under Captain Crowe." Brevet-Captain F. Wheeler was also favourably noticed in this order.

1825. The enemy having re-occupied the old Portuguese fort and factory at Syriam, a detachment of H.M. 47th Regiment, with parties of Seamen, Marines, and Pioneers, were sent to dislodge them, which service was performed on the 11th and 12th January 1825. Ensign McLeod and four men of the Pioneers were wounded on this occasion.

An advance was then made towards Prome, Sir A. Campbell with 2,400 men to move by land, starting on 13th February, and a column 1,169 strong under Brigadier-General W. Cotton moving up the river on 16th; there were 257 Pioneers with the main force, and a detachment with the river column. On 28th the latter column came in sight of Donabyo where the Burmese General Maha Bandula was posted with 15,000 men, and Cotton attacked on 7th March, one stockade was carried but the attack on the next was repulsed, Cotton therefore decided to re-embark, and drop down the river to wait for reinforcements. Sir A. Campbell on receiving this intelligence returned to

Donabyo and reached that place on the 25th March. The batteries opened fire on 1st April, and Maha Bandula being killed by a shell, the Burmese evacuated the position that night. The advance was then continued to Prome, which was occupied without opposition on 25th April. 1825.

On the 5th May a force under Lieut.-Col. Godwin H.M. 41st Regiment, accompanied by a body of Pioneers, was sent to explore the country in the direction of Tonghoo, and returned on the 24th of the same month after having made a circuit of 139 miles. The army remained at Prome until the end of the year, first on account of the rains in June, July, and August, and afterwards owing to an armistice for one month, the terms of which were agreed upon on the 16th September. The 1st Battalion of Pioneers suffered much from sickness at this time, as it appears from a present state of the Army, dated at Prome on the 18th August, that out of 542 rank and file 133 were in hospital, being at the rate of $24\frac{1}{2}$ per cent.

The rates in the European and Native Infantry on the same date were very much less, viz : 11.30 and 14.55 per cent. respectively. This difference in all probability was owing to the severe and laborious nature of the duties performed by the Pioneers.

The battalion was engaged in the actions at Simbike and Nepadee near Prome on the 1st, 2nd and 4th December. Lieutenant J. Smith was dangerously wounded on the first of those occasions, and six men were also wounded.

A part of the battalion was present with the detachment under Lieut.-Col. Conry, which was repulsed at the attack of the stockade at Sittang on the 7th January, and also at the successful attack on the same place by Lieut.-Col. Pepper on the 11th idem. The Pioneers losing one man killed and four wounded. 1826.

On the 19th January 1826, the fortified and entrenched city of Mellun was attacked and carried. Sir Archibald Campbell, in his report to the Supreme Government, dated 20th January, thus mentions the Pioneers : " I ordered the construction of batteries, and the landing of heavy ordnance from the flotilla to commence immediately after midnight, and every requisite arrangement to be made for an early attack upon Mellun. His Lordship in Council will be enabled to appreciate the zeal and exertion with which my orders were carried into effect under the direction of Lieut.-Col. Hopkinson commanding the Artillery, and Lieutenant Underwood, the Chief Engineer, aided by that indefatigable Corps, the 1st Battalion Madras Pioneers, under the command of Captain Crowe, when I state that by 10 o'clock the next morning I had eight and twenty pieces of ordnance in battery on points presenting a front of more than one mile on the eastern bank of the Irrawaddy, which corresponded with the extent of the enemy's line of defence on the opposite shore."

After the capture of Mellun the army advanced to Pagan-myo, and on the 9th February defeated the enemy near that place and stormed the city on the same day.

Peace was concluded on the 24th February, and shortly afterwards the services of the Pioneers were acknowledged by the Governor-General in the following words:—

"The Governor-General in Council acknowledges, with peculiar approbation, the gallant and indefatigable exertions of that valuable Corps, the Madras Pioneers, under Captain Crowe."

Brigadier McCreagh reported in a despatch that:—

"The effective exertions of the Madras Pioneers under Captain Milne, attracted the notice of everyone."

Sir George Walker, the C-in-C. of the Madras Army said in a despatch :—

“In the Ava War, the Pioneers may be said to have essentially contributed to the success of our arms. Their conduct was beyond all praise.”

The following is an extract from G.O.G. No. 94, dated 15th May 1827. “To mark the high sense which the Government entertain of the indefatigable exertions of the Corps of Pioneers throughout the War in Ava, the Honourable the Governor in Council is pleased to resolve, as a special case, that Jemadar Andoo, of that Corps, whose gallant conduct has been particularly brought to notice, shall be promoted to the rank of Subadar, that he be presented with a palankeen, and an allowance of Rs. 70 monthly for the support of that equipage, and that a pension of half pay be granted to his nearest heir after his decease.”

Captains Milne and Crowe were twice, Captain Wheeler three times, and Lieut. Marcartney once mentioned in despatches.

The Honour “AVA” was granted to the Corps.

Reorganisation of the Corps.—In November 1821, Major T. F. de Havilland, the Chief Engineer Madras, submitted a report as to the status of the Engineer Corps, and the improvement of the Pioneers Battalions, and the following extracts refer more especially to the Pioneers :—

11. By the system now in force, the C-in-C. cannot consult the Chief Engineer, and therefore applies elsewhere for information which the Chief Engineer is best able to give him. *

12. The Q.M.G. of the army prepared a memoir on pontoons and bridges; this should have come within the province of the Chief Engineer. The Q.M.G. would not have been taken up with matters foreign to his Department. *

14. The C-in-C. cannot select officers from the Engineers to perform any service. *

15. The Corps of Engineers is a skeleton Corps. When Pioneers were first formed there was no Corps of Engineers, hence the Pioneers were, and are still, officered from the Infantry, partly because the C-in-C. cannot appoint Engineer Officers without the concurrence of the Governor.

16. The inconvenience of this arrangement is, that on service the Pioneers are often placed under officers entirely new to them.

18. Component parts of the department should be duly organised and brought together.

19. Pioneers should at any rate be under Engineers.

20. They would then be instructed in management of boats and pontoons for military service.

21. The Q.M.G. in his memo. on pontoons points out the necessity of a special establishment, states that the Pioneers under their present organisation are disqualified for its management, and that selected Pioneers should be obtained from the two battalions for this work, and placed under a qualified officer.

22. The Q.M.G. however relied for the success of his experiments regarding pontoons entirely on the Pioneers, to the exclusion of Engineers. It ended in his being obliged to ask for the services of an Engineer Officer.

28. The Pioneer Officer receives double the pay of his rank. This seems in justice to belong to the Engineers.

29. Many instances have occurred in which Pioneers have been employed to the exclusion of Engineers. In the late Mahratta cam-

*At that time the Engineers were under the Governor, whilst the Pioneers were under the C-in-C.

paign under the C-in-C. (army 20,000 to 30,000), the Commanding Engineer was a Subaltern, though there were then for duty two Field Officers and all the Captains. It was found necessary to raise a small Corps of Sappers and Miners, who had to be organised, trained, and brought into action at the same time by a young officer, aided by a few still younger. 1821.

38. The Court of Directors evidently wishes to have a regular Corps of Sappers and Miners at each Presidency.

39. The men to be given to the Engineers should form an integral part of the Corps, and not merely be attached to them.

40. Sappers and Miners should bear arms, and be capable of defending themselves.

41. Best arms probably the fusil and bayonet, with a light pouch, and perhaps a lance and pistol for front rank men; they should also have a working dress, dark blue or green.

42. As there does not appear to be any necessity for both Sappers and Pioneers, I may be expected to show how the latter can be dispensed with in the Q.M.G.s department.

43. Duties of Pioneers are clearing roads on line of march, and ground for encampments.

44. Gun and store lascars might be provided with light Pioneer tools for this purpose, they might have the additional aid of the tent establishment, and each company of Infantry might have one Pioneer to precede the Corps in a small body, while the Engineers would be available on urgent occasions.

46. Taking the Pioneers away from the Q.M.G. would not impede the service, and it would be better to have Engineers with the men, than merely extend the services of the Pioneers as proposed by the Q.M.G.

52. The regimental pay of the Engineers is calculated on the lowest scale of any in the army.

53. When an officer of Engineers is called to the field, he loses his extra allowances, and finds that Pioneer officers get better pay than he does.

59. Four classes of Engineer soldiers are required, Pontooners, Artificers, Miners, and Pioneers. The whole of them to be enlisted, and to comprise Europeans, Men of Colour, and Natives. The present Corps of Pioneers to be transferred to the Engineers.

60. Corps should be termed "Regiment of Engineers," and be composed of two battalions, each of the following strength:—

One European Flank Company. One "Men of Colour" Flank Company.

6 Sergeants	6 Sergeants
6 Corporals	6 Corporals
20 Pontooners	20 Artificers, 1st class
24 Sappers and Miners	24 Artificers, 2nd class
50 Pioneers	50 Artificers, 3rd class
2 Drummers	2 Drums and Fifes
1 Bugler.	1 Bugler
	20 Apprentices

Eight Native Companies.

8 Sergeants	160 Pontooners
8 Subadars of 3 classes	200 Sappers and Miners
16 Jemadars	408 Pioneers
32 Havildars	8 Buglers
32 Naicks	16 Drummers and Fifes
80 Recruit and Pension Boys.	

Grand total 1206, or for two battalions 2412.

61. Regiment should be officered, and have the requisite staff as follows:—

1821. One Colonel, 3 Lieut.-Colonels, 3 Majors, 12 Captains, 24 Lieutenants, 24 Second-Lieutenants.

In December 1821, the Q.M.G. wrote a rejoinder to shew—"That the services of the Pioneers are essential to the Q.M.G. and that they consequently cannot be separated from his department." A considerable controversy followed, and eventually all the correspondence was forwarded to the Court of Directors with the result that:—

1823. In the year 1823, the Court of Directors issued orders for the reduction of one of the two battalions of Pioneers, and directed that the remaining battalion should be officered from the Corps of Engineers. The following reasons were assigned by the Court for the proposed change:—

"It is obvious that the utmost advantage cannot be derived from the labour of Pioneers unless it be scientifically directed, and consequently it would be for the interest of the service that the whole of the Pioneers should be put under the command and direction of officers of Engineers regularly instructed in the art of sapping and mining, making pontoons and bridges, roads and surveys, fortifications and other buildings. We have for many years, with equal care and success, and at a great expense, educated young men for these purposes at Addiscombe, and it seems to be high time that we should reap the benefits derivable and expected from that institution.

"We therefore direct that the Pioneers be transferred to the Engineers, and the officers of the line at present attached to them returned to their respective Corps."

* * * * *

"One battalion of Pioneers will, in our opinion, be sufficient under this arrangement, and we therefore direct that our former order for disbanding the second battalion be carried into effect."

1824. And consequently in August 1824, a general order was published in India directing the Pioneer battalions to be transferred to the Engineer Corps as soon as practicable; but when this order was issued the Corps of Madras Engineers was so weak, that it could not spare officers for the Pioneers without great detriment to the public service, for which reason Sir Thomas Munro, then Governor of Madras, strongly advocated the maintenance of both battalions upon the existing footing for the time being, but as he anticipated the most beneficial results from eventually converting one battalion into "Sappers and Miners," he recommended that a party of Non-Commissioned Officers, duly instructed at Chatham under Colonel Pasley of the Royal Engineers, should be procured from England.

The Court acceded to the postponement of the fulfilment of their orders, and these were not carried out until 1831.

1825. In February 1825, two companies, each of the undermentioned strength, were added to each battalion as a temporary measure:—

1 Subaltern	1 Pakhali
1 Jemadar	4 Naicks
3 Havildars	97 Privates

An additional number of artificers was also allowed to each battalion at the same time, viz:—

1 Carpenter	1 Hammerman
1 Smith	1 Bellows Boy

1831. Early in 1831, one Sergeant, one Second-Corporal, and eight Sappers arrived from Chatham. About the same time the services of several officers of Engineers became available owing to the discontinuance of the forces in the Doab and in Travancore; and the subject of the reorganisation of the Pioneers was again taken into consideration by Government.

Lieutenant-General Sir George Walker,* G.C.B., then Commander-in-Chief, opposed the proposed change in a Minute dated 7th February 1831, on the ground that the Corps of Engineers could not, in his opinion, supply commissioned officers in sufficient numbers to preserve interior economy and discipline, and also because he assumed that the Corps, as newly constituted, would cease to be under the immediate control of the Commander-in-Chief. 1831.

As Sir George Walker, in his Minute above specified, took occasion to speak very highly of the Corps of Pioneers, the following extracts therefrom are here given :—

“They have now been in existence as distinct and separate battalions for a great number of years, and during that period they have shared in every active service that has gone forward. In the Ava war they may be said to have essentially contributed to the success of our arms. The constitution of the Corps as it at present stands I consider to be hardly capable of improvement.

* * * *

“The experience of the last 25 years will best vindicate the constitution and establishment of the Pioneer Corps. They have ever been mentioned in terms of the highest commendation, and in Ava particularly their conduct was beyond praise.

* * * *

“If they are required for the siege of any fortified position, the details that are necessary for the service are placed at the disposal of the Engineers, and when the service is concluded they are returned to Head-Quarters. When I know therefore, from my own experience, how much military success depends upon the personal intrepidity of these men, I naturally come to the question with feelings of no trifling interest. The escalade of every fortified post (in this country) must depend upon the gallantry of the Pioneers. No substitute can be furnished to carry scaling ladders where it is so necessary to preserve the European soldier for actual conflict, and I repeat again that upon this Corps success must naturally depend. It is therefore to be hoped that no arrangement will be sanctioned by Government which will deprive the Commander-in-Chief of the management and control of so important a part of the Military body, and without which he cannot be responsible for the efficiency of the army.

* * * *

“I am only anxious that their present establishment should continue undisturbed, and that the Corps, as regards their interior economy and discipline, shall remain in their present state of perfect efficiency.

* * * *

“Under all these circumstances, therefore, I am induced to express an earnest desire that Government will preserve this fine Corps to the Madras Army. They have a spirit amongst them which, if once injured, may never be restored, and with their present officers to conduct them, they have invariably evinced an intrepidity on service which has deservedly placed them so high in the estimation of Government.”

The difficulties anticipated by Sir George were surmounted, and on the 19th April it was resolved by Government that the 1st Battalion of Pioneers should be converted into a Corps of Sappers and Miners and officered from the Corps of Engineers, and that the men should be

* Commanded the 7th Division at the battle at Orthes in February 1814.

1831. regularly instructed in mining, sapping, and pontooning, and all other duties which engineer soldiers have to perform in time of war. This resolution was promulgated in the following order:—

Establishment of the “Sappers and Miners.”—Fort St. George, 24th May 1831. “The Right Honourable the Governor in Council is pleased to direct that the 1st battalion of Pioneers shall be converted into a Corps of Sappers and Miners, and that it shall be commanded by an officer of Engineers, with an Adjutant and such other officers of the Corps of Engineers as can be conveniently spared for that purpose.

“2. The European Sappers and Miners lately arrived from England to be attached to the Corps as Non-Commissioned Officers.

“3. The following establishment is accordingly fixed for the Corps of ‘Sappers and Miners,’ which will consist of eight companies:—

Establishment.				
Captain Commanding	...	...	1	Subalterns 8
Assistant-Surgeon 1				
Non-effective Staff.				
Adjutant	...	...	1	Quartermaster-Serjeant ... 1
Serjeant-Major	...	...	1	Serjeants 8
Natives.				
Jemadars	...	...	8	Pakhalis 8
Havildar-Major	...	...	1	Pay Havildars (Non-effective) 8
Havildars	...	...	24	Assistant Apothecary ... 1
Naicks	...	...	24	Second Dresser 1
Privates	...	...	640	Toties 2
Recruit and Pension Boys	...	...	48	Vakil 1
Bazaar Servants.				
Choudry	...	...	1	Bullock Maistry 1
Cooly Maistry	...	...	1	Peons 2
Artificers.				
Carpenters	...	...	5	Hammermen 4
Smiths	...	...	4	Bellows Boys 4

“4. The Commanding Officer and Adjutant of Sappers and Miners, and Officers commanding companies, are authorised to draw the same staff pay and allowances as Officers of Pioneers of corresponding rank.

“5. The pay of the European Non-Commissioned Staff of the Sappers and Miners is fixed as follows:—

		Rs.	A.	P.
Serjeant-Major	{ Pay	...	35	0 0
	{ Batta	...	8	7 0
	{ Staff Pay	...	14	0 0
Per Month		...	57	7 0
Serjeant	{ Pay	...	28	11 10
	{ Batta	...	8	7 0
	{ Staff Pay	...	...	...
Per Month		...	37	2 10

“6. The Corps of Sappers and Miners will be entitled to the benefit of the non-effective establishment to share in prize-money, to compensation in lieu of rice, &c., on the same terms as other branches of the Army.

“7. Mess tent allowance, peace and field, will be drawn by the Corps of Sappers and Miners the same as for a battalion of Pioneers.

“9. The same allowance on account of a Regimental School authorised for the Pioneers is sanctioned for the Sappers and Miners.

"10. The Sappers and Miners to be placed under the immediate control of the Chief Engineer, who will communicate direct with Government on all subjects connected with its employment; the discipline and economy of the Corps to be directed by His Excellency the Commander-in-Chief. 1831.

* * * *

"12. Captain A. Lawe, M.E., is appointed to command the Corps of Sappers and Miners, and Lieutenant E. Lawford, M.E., to be Adjutant.

"13. The following Subaltern Officers are posted to the Corps of Sappers and Miners, viz :—

1st Lieut. Stafford Vardon, M.E.	2nd Lieut. Henry Watts, M.E.
" " Jasper Higginson Bell, M.E.	" " John Parry Power, M.E.
" " Frederick Ditmas, M.E.	" " Thomas Smythe, M.E.
2nd " John Clarke Shaw, M.E.	

"14. The regiment to be clothed as Engineers on the next issue of clothing.

"15. The computations of off-reckonings for the Corps of Sappers and Miners to be the same as the corresponding ranks in the Pioneers, the amount of which will be carried to the General Off-reckoning Fund.

"16. The foregoing orders are to take effect from the 1st July next."

The Corps of Sappers and Miners to bear on its Colours and Appointments the Honorary Distinctions won as Pioneers from the capture of Seringapatam in 1799, to the war in Ava 1824-26.

Operations at Kittur.—An insurrection took place at Kittur, near Belgaum, towards the end of 1824, and a detachment of the 2nd battalion of Madras Pioneers under Lieut. Clendon, with Lieut. G. Burn, was detailed as part of the force sent there, and took part in the siege of Kittur Fort from 3rd to 5th December. The Pioneers had one man wounded. Colonel Deacon commanding the force reported :— 1824.

"The useful and indefatigable Corps of Pioneers under Lieut. Clendon, were most actively employed throughout."

Operations in Kohlapur.—In September 1827, a force of over 5,000 men with 20 guns was sent against the Raja of Kohlapur who was troublesome; 160 Madras Pioneers, under Lieut. G. Burn, were with this force, but the Raja thought better of it, and although he had 20,000, men he surrendered without fighting. 1827.

Expedition to Malacca.—In December 1831 "C" and "G" companies of the Sappers and Miners under Lieut. J. H. Bell, with 2nd-Lieuts. H. Watts, and T. Smythe, embarked for Malacca, and were employed with the field force under Lieut.-Colonel Herbert in 1832. During this severe and harassing service the detachment was present at the assault and capture of the stockades at Sangi-patti on the 17th March, of those at Kalama on the 25th idem, of the works at Bakti-si-Barsu on 25th May, when the Sappers lost one man killed, and at the stockades at Tabu on 15th June which brought the war to a successful conclusion. In July, Captain A. Lawe, commanding, Lieut E. Lawford, Adjutant, Captain A. Roberts, and Lieuts. Ditmas and Horseley with the H.Q. of the Corps and "A" and "F" companies, 328 N.C.O.s and men embarked to join the force in Malacca, and reached Penang, but they were too late to take part in the operations, and returned to Madras at the end of August. Lieut. Bell remained some time longer in the country, and did not reach India till 3rd December. 1831. 1832.

After the 1st battalion of the Pioneers was converted into a Corps of Sappers and Miners in May 1831, the 2nd battalion continued as Pioneers until it was also incorporated in the Sappers in 1834. Whilst 1831.

1831. the Sappers were employed in Malacca, the Pioneers were at work on the Kunda Ghat in the Nilgiris, under Captain W. Murray with Lieut. Le Hardy. On 10th December 1831 Captain W. Murray wrote:—

“Lieut. Le Hardy and I endeavoured to descend the pass on 21st November (never used except by smugglers), we descended three miles, and then returned to avoid being benighted. I sent on a havildar with pioneers and guides, with orders to reach Mangari, not far from the Beypore river. They took three days doing it, having had to cut their way through many parts of the jungle.”

1832. On 9th June 1832, the final report of the Kunda Ghat was sent in. Captain Murray stated:—

“This report will shew the Governor what the Pioneers have done, and are capable of doing. It will give an approximate supplement to his own (the Governor's) general order, and will manifest to all India what the Madras Pioneers have been able to execute. Since the period of the Governor's visit to the Kundas, six miles of mountain road have been completed, and every impediment surmounted, being a progress I imagine, rarely equalled by any body of men of equal strength. This stupendous work in which there were vast forest trees to be felled, deep chasms to be filled up, causeways over every river and mountain torrent to be constructed, and rocks to be removed, was begun on 10th January, and finished on 31st May 1832.

1833. **Incorporation of the 2nd Battalion of Pioneers into the Corps of Sappers and Miners.**—In December 1833 a despatch was received from the Court of Directors ordering the reduction of “the establishment of Sappers and Miners, or of Pioneers, whichever they might be called,” to one battalion; in conformity with which the remaining battalion of Pioneers was absorbed in the Corps of Sappers and Miners in the manner directed in the following order:—

G.O.C.C. Head-Quarters, Choultry Plain, 27th December 1833.—
“Under the sanction of the Right Honourable the Governor in Council, and with reference to the G.O.G. of the 7th June last, the Commander-in-Chief directs that the Corps of Pioneers be incorporated into the Sappers and Miners from the 1st February next.

“The European Officers now serving with the Pioneers are to muster and pay their men, and settle all accounts up to the 31st January inclusive, from which date their present employment and pay as Pioneer Officers are to cease, and they will proceed to join their respective Corps.

“The Native Officers, Non-Commissioned Officers, Naicks, Privates, Pakhalis, Boys, Maistrys, and Artificers are to be borne on the returns of the Sappers and Miners as supernumeraries until vacancies occur to bring them upon the establishment, or until otherwise disposed of.”

* * * *

1834. **Distribution of the Corps.**—The following distribution of the eight companies of Sappers and Miners is established from the 1st February 1834, in order to give a fair distribution of the command allowance and Pay Havildars:—

Regimental Head-Quarters, Bangalore ...	3 companies.
Detachment, Nilgiris	2 do.
Do. Madras	1 do.
Do. Hyderabad Road	2 do.

The Corps of Sappers and Miners was officered from the Engineers up to the year 1839, (with the exception of an occasional Infantry officer attached for field service when in consequence of the employment of several Engineer Officers) on service, five or six Infantry

Officers were appointed to do duty, from which time up to 1879 a certain proportion of Infantry Officers were always present with the Corps, both in garrison and in the field. 1834.

Operations in Kimedi.—In February and March 1834, "D" company of the Sappers and Miners under 2nd-Lieutenants Power (died) Macaulay, and H. C. Armstrong, served with the force employed on field service in the hill zemindary of Kimedi, and were included in the thanks of Government conveyed in the order of the 1st July, from which the following is an extract:—

"The Governor in Council has observed with high approbation the exemplary conduct of all the troops employed in this arduous and harassing service, their patient endurance of extraordinary fatigue and privations, and the gallant and resolute spirit with which they executed every enterprise to which they were led by their officers, whose activity and energy have been conspicuous."

Lieut. J. P. Power died at Kimedi on 5th April 1834, and was succeeded in the command of the detachment of Sappers and Miners, by Lieut. Macaulay, an Infantry Officer. The detachment of Sappers was retained in the Kimedi district for some time after the field service there was over.

In September 1835 Government, to "mark their approbation of the conduct and services" of the troops employed in Kimedi in 1833-34, granted a gratuity to the European officers, equal to one month's pay and allowances, and one month's pay to the Native officers and men of all ranks engaged in the said service.

War in Coorg.—The force of 6,000 men detailed to invade Coorg was divided into four separate columns, as owing to the dense jungle and absence of roads the advance of large columns was impossible.

Three hundred Sappers under Captain G. A. Underwood, with Lieutenant and Adjutant Stafford and Lieut. Horseley, were with the main or eastern column under Brigadier Lindsay; this column moved on 2nd April 1834, from Bettadapura, and met some opposition in crossing the Kaveri but the enemy made no further resistance on this side and the troops entered Mercara on 6th April.

Two hundred Sappers, under Lieut. Ditmas with 2nd-Lieut. Orr, were with the northern column under Colonel Waugh, this column marched on 1st April from Hosakotta, and met with serious opposition, an attack on the Bak stockade being repulsed with the loss of 166 killed and wounded, the Sappers losing 17.

Two hundred Sappers (under Lieut. Bell, with 2nd-Lieut. Rundall) were with the western column under Col. Foulis, this column left Cannanore for Virarajendrapet on 31st March, and encountered considerable opposition on the Ghat on 2nd and 3rd April, when 48 were killed and wounded, six of these being Sappers; after the 3rd no further opposition was met, and the column moved to within seven miles of Mercara, a detachment with some Sappers being sent en route to Nalkanaad, which surrendered.

No Sappers were with the 4th column.

The companies engaged were "A" "B" "C" "E" and "F."

The Rajah of Coorg gave himself up on 10th April, and hostilities thereupon terminated.

In October 1834, the following order was issued by the Governor-General when granting a medal to Havildar Chokalingam of the Sappers and Miners for distinguished conduct in Coorg:—

Bangalore 15th October 1834.—"The Right Honourable the Commander-in-Chief having laid before the Council of India the proceedings of a Court of Enquiry assembled at Ootacamund on the 27th ultimo,

1834. of which Lieut-Col. King was President, to ascertain the claims of certain Native soldiers of the Madras Army reported conspicuous for gallantry during the late operations in Coorg, and it appearing that Havildar Chokalingam of the Corps of Madras Sappers and Miners has satisfactorily established pretensions to eminent bravery in the advance of the column under the command of Colonel Foulis, the Governor-General in Council, as a mark of the high sense he entertains of the distinguished conduct of that Non-commissioned Officer, is pleased to confer upon him an honorary medal, and an increase for life of one-third of his present pay."

After the war in Coorg, the H.Q. of the Corps were removed to Mercara.

1835. In December 1835, the Commander-in-Chief having reviewed the Sappers and Miners at Mercara in Coorg, issued a highly complimentary order regarding the intelligence displayed by them in the various operations of attack and defence which they executed during the inspection.

1836. **Operations in Gumsur.**—In the autumn of 1836, General Taylor was despatched with a considerable force against the Raja of Gumsur who had revolted. On 7th October Lieut. Smythe was ordered to take charge of the detachment of Sappers proceeding from Hyderabad to Gumsur, and 2nd-Lieut. Armstrong also of the Sappers and Miners was directed to join the field force with the European Sappers he had under him. Lieut. Smythe commanded the detachment till 26th December when he was ordered to return to his duties at the Presidency, and the command devolved on Lieut. Armstrong.

The following is an extract from despatches :—

"The campaign was of unexampled severity. We had no knowledge of the country, were frequently cut off from supplies, and suffered fearfully from the pestilential nature of the climate. Hardship, privation, and toil were the lot of all who took part in the campaign."

On the successful termination of the operations in March 1837, the detachment, in common with the rest of the force, received the thanks of Government, conveyed in the following words :—

* "The Right Honourable the Governor in Council has observed with high approbation the exemplary conduct of all the troops employed in the late arduous and harassing service, their patient endurance of extraordinary fatigue and privation, and the gallant and resolute spirit with which they executed every enterprise to which they were led by their officers, whose activity and energy have been conspicuous."

Establishment and pay of European Warrant and Non-commissioned Officers of Sappers and Miners.—In December 1836 the establishment of European Warrant and Non-commissioned Officers for the Corps was fixed by the following order :—

Fort St. George, 6th December 1836. "The Right Honourable the Governor in Council is pleased to fix the following establishment of European Warrant and Non-Commissioned Officers for the Corps of Sappers and Miners :—

1 Conductor	12 Serjeants
1 Serjeant-Major	12 First Corporals
1 Quartermaster-Serjeant	12 Second Corporals

* This order is word for word, the same as that issued in 1834 with reference to the troops employed in Kimedi; the nature of the service in the two cases was exactly similar.

The pay and batta of the non-commissioned ranks above enumerated are fixed at the same rates as established for the corresponding ranks of Foot Artillery, Second Corporals classing as Bombardiers. 1836.

When employed at field practice, or on work of any kind such as road-making, boring, etc., they are further to receive an addition of five annas per diem working pay.

The Conductor is to receive the same pay and allowances as a Conductor of Ordnance.

Men found unfit for the Corps of Sappers and Miners, from unsteadiness or other causes, will be liable to removal by authority of the Commander-in-Chief to the Artillery or Infantry, according to the terms of their original enlistment.

The duty of the Conductor now appointed will be the charge of the Quartermaster's Office and Department of the Corps."

On the same date an order was issued by which it was directed that Havildars and Naicks of the Corps of Sappers and Miners should, when pensioned on half-pay, receive an exact moiety of their effective pay in lieu of present rates, and in accordance with the practice in force with the Native troops generally.

Revision of establishment. The Corps placed under the direct control of the Commander-in-Chief.—Under G.O.C.C. of the 3rd February 1837 the establishment of the Corps of Sappers and Miners was revised and fixed as follows :— 1837.

Captain Commandant	...	...	1	Second Corporals	...	...	12
Subalterns	...	...	8	Havildar-Major	...	...	1
Assistant Surgeon	...	...	1	Havildars	...	...	24
Jemadars	...	...	8	Naicks	...	...	24
Conductor	...	...	1	Privates	...	...	640
Serjeant-Major	...	...	1	Recruit Boys	...	...	24
Quartermaster-Serjeant	...	...	1	Pension Boys	...	...	24
Serjeants	12	Pakhalis	8
First Corporals	12	Artificers	16

Bazaar.

Chowdry	1	Peons	2
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Medical Establishment.

Assistant Apothecary	1	Native 2nd Dresser	1
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Toties 2

2. The Corps to be armed with light fusils, with a fusil pouch, and buff accoutrements.

3. It is to stand in the same relation to the Commander-in-Chief and different Military authorities as a regiment of the line.

4. Movements will be under the direction of the Quartermaster-General, who will also issue orders regarding work to be performed; the details of such work resting with the Engineer officer in command, that is, certain work having to be executed, the order for its execution will be given by the Quartermaster-General, and the Commanding Officer of the Corps or detachment will decide upon the number of the men to be employed, and the manner of their employment.

5. All correspondence of the Corps is to be addressed as in other regiments through the Division, or other intermediate authorities to the A.G., Q.M.G., or other officers with whose department it may be connected, the only communication which will be necessary to be made to the Chief Engineer being a copy of the Monthly Return.

6. Europeans of the Sappers and Miners will be eligible for advancement in the Ordnance and other public departments, and Serjeants attached to the Superintending Engineers of Divisions will in future be selected exclusively from the Corps."

In para. 7 the uniform of the Conductor is described.

Further revision of establishment. Introduction of the grade of Subadar.—Under G.O.G. of the 26th December of the same year the establishment was again revised, and it was then ordered that the Corps should consist of six companies, and each company of:—

1 Subadar	2 Buglers
1 Jemadar	120 Privates
2 Serjeants	1 Regimental Lascar
2 First Corporals	1 Pakhali
2 Second Corporals	or
4 Havildars	2 Bhistis
8 Naicks	4 Artificers

Forming the following establishment.

Commandant	1	Buglers	12
Subalterns	8	Privates	72
Assistant Surgeon	1	Regimental Lascars	6
Subadars	6	Recruit Boys	24
Jemadars	6	Pension Boys	24
Conductor	1	Pakhalis	6
Serjeant-Major	1	or	
Quartermaster-Serjeant	1	Bhistis	12
Serjeants	12	Artificers	24
First Corporals	12	Chowdry	1
Second Corporals	12	Peons	2
Havildar-Major	1	Assistant Apothecary	1
Havildars	24	Native 2nd Dresser	1
Naicks	48	Toties	2

Non-effective Staff.

1 Adjutant	6 Pay (Orderly) Havildars
1 Subadar-Major	6 Staff (Colour) Havildars

This change was very advantageous to the Corps, as the number of Native Officers was increased by four, and the superior grade of Subadar introduced for the first time. Moreover, the number of Naicks was doubled.

1838. **Organisation, Instruction, and Employment of the Corps:**—Under G.O.C.C. of 15th February 1838 the following orders were issued:—

1. The Head-Quarters of the Corps to be permanently stationed at Bangalore.
2. Two companies, with their European Officers, to be stationed at Head-quarters for the purpose of instruction in sapping and mining and civil engineering.
3. These companies, with their officers, to be relieved biennially, so that the whole Corps may pass through its instruction once in six years.
4. The remaining four companies, when not employed in military work, to be placed at the disposal of the Revenue Board for employment on other public works.
5. When employed under the Revenue Board the O.C. each company to be *pro: tem:* an assistant to the Civil Engineer of the District in which he is serving, and whether employed on military or other works, the O.C. the company is to be charged with the Superintendence of all work upon which his men may be employed.
6. The detached employment of individuals, whether Non-Commissioned or others, not to be allowed; but small details, whenever required, to be furnished as regular parties from the nearest detachment, the O.C. the Detachment retaining charge, and whenever practicable being entrusted with the control of the work.
7. When employed on active field service, the officer at the head of the Quartermaster-General's Department will communicate to the Officer Commanding the Sappers and Miners all work properly apper-

taining to the duty of Pioneers, and the latter will adapt the means at 1838. his disposal to attain the object required.

8. Each company to be complete in itself, and to be capable of performing every duty to which it may be liable, either in peace or war, independently of Head-Quarters, and for this purpose each company to be armed and equipped as in the annexed tables.

9. Every Engineer Officer, on his first arrival in India, to be posted to the Corps of Sappers and Miners, and to join at Head-Quarters, where he is to do duty until reported by the Commanding Officer to be qualified for detached employment.

**MEMORANDUM OF ARMS AND TOOLS REQUIRED FOR EACH COMPANY.
TO BE CARRIED BY THE COMPANY.**

One Company.	Implements, &c.							Remarks.
	Hooks Bill.	Axes Pick.	Mamooties.	Axes Hand.	Axes Felling.	Axes Broad.	Crowbars.	
1st Section, 30 men	...	30	These sections are thus supplied. with tools :— 18 men—18 pickaxes, 12 bill hooks, and 6 felling axes. 8 men—8 mamooties and 8 hand axes. 3 men—3 broad axes. 1 man—1 crowbar. 30 men.
2nd „ „	...	12	18	8	8	6	3	
3rd „ „	...	12	18	8	8	6	3	
4th „ „	...	12	18	8	8	6	3	
Total ...	66	54	24	24	18	9	3	

All the European and Native Non-commissioned Officers to be armed with fusils.

The 1st section to be armed with fusils, the other three with pistols, one per man.

**SPARE TOOLS TO BE CARRIED WITH THE COMPANY, ON A CART
OR BULLOCKS, ON SERVICE.**

Axes, pick	...	...	45	Drag ropes	...	...	4
Axes, felling	...	...	9	Hooks, bill	...	...	34
Axes, hand	...	...	18	Hammers, sledge	...	...	6
Axes, broad	...	...	6	Jumpers	...	...	4
Crowbars	...	...	2	Tamping bars	...	...	4
Mamooties 33.							

Artificers for one Company.

1 Carpenter	1 Hammerman
1 Smith	1 Bellows Boy

Memo. of tools required for the whole Corps:—

Tools.	For one Company.	For six Companies.	To be kept in Regimental Stores for Depot practice.
Axes pick	54	324	270
„ felling	18	108	54
„ broad	9	54	36
„ hand	24	144	108
Crowbars	3	18	12
Bill hooks	66	396	204
Drag ropes	—	—	24
Sledge hammers	—	—	36
Jumpers	—	—	24
Tamping bars	—	—	24
Mamooties	24	144	198

Under G.O.C.C. dated 20th March 1838, the reduction of the number of companies from eight to six was carried out as follows:

1838. the "B" company at Ramnad was broken up, and "G" and "H" companies at Masulipatam were formed into "B" Company. The companies were then stationed as follows:—

At Head-Quarters, Bangalore,	"A" "C" and "E" companies.
At Masulipatam	"B" company.
At Red Hills	"D" do.
In Coorg	"F" do.

Batta.—Under G.O.G. 85 of 5th June 1839, orders were issued that Native Commissioned, and European and Native Non-commissioned, and other grades of Sappers and Miners should receive full batta in all situations, when present with any part of their Corps, or detached on duty.

The monthly rates of batta being:—

	If entertained prior to 1-5-1837.	If entertained after 30-4-1837.
Jemadar	Rs. 7 8 0	Rs. 7 8 0
Havildar	" 5 0 0	" 5 0 0
Naick	" 5 0 0	" 5 0 0
Private	" 2 5 10	" 1 8 0
Follower liable to muster	" 1 14 5	" 1 8 0
Follower not liable to muster	" 1 8 0	" 1 8 0

Arms and Equipment.—The establishment of tools carried by the men was revised by G.O.C.C. dated 26th October 1838, owing to the introduction of working knives, and the arms and equipment of the Corps was laid down as follows:—Per company.

The two Native Officers and two Buglers were armed with a sword, the six B.N.C.O's, four Havildars and eight Naicks, and 1st section (30 men) carried fusils with bayonet knives.

The other 3 sections (90 men) carried—

45 Working Knives	} 90, in sheaths on a special belt.	18 Axes, felling	} 90
45 Axes, hand		45 Axes, pick	
		24 Mamooties	
		3 Crowbars	

The Sergeant-Major, Quartermaster-Sergeant, and Havildar-Major were armed with swords.

The following spare tools per company were carried on carts or bullocks:—

30 Working knives	|	4 Drag ropes
12 Axes, felling		6 Hammers, sledge
30 " hand		6 Jumpers
30 " pick		3 Tamping bars
16 Mamooties		3 Needles
2 Crowbars		3 Sap hooks.

"These tools and other implements are calculated for maintaining the Corps in an efficient state under ordinary circumstances, and as it is impossible to provide for all contingencies, the Officers Commanding the Corps or detachments therefrom are permitted to indent in the ordinary manner for such further supply without limitation to description or quantity as the nature of the work on which they may be employed may render indispensable."

1839. **Equipment.**—The camp equipage for complete companies of Sappers and Miners was fixed by G.O.G. of 6th August 1839, as follows:—

5 Privates	two poled tents for the Native portion of the Company.	
1 Do.	Do.	2 Sergeants
1 Do.	Do.	4 Corporals
1 Do.	Do.	Guard and Stores.

Recruiting.—The following rules for Sapper recruits were laid down in G.O.C.C., dated 21-9-1839:—

The standard of height to be 5'5", but Recruit Boys, and men who are specially eligible except for height, may be taken at 5'4". Recruits to be between 16 and 22 years of age. Special regard should be

had to the nature of Sapper duties, which require them to be of a firm muscular and athletic frame, capable of enduring every species of bodily labour. It is also desirable that a portion at least of the recruits should be acquainted with one or other of the ordinary handicrafts, such as bricklaying, carpentry, stone cutting, sawing, pottery, etc. Regimental lascars should also be of a robust make. 1839.

Campaign in Kurnool, 1839.—The Nawab of Kurnool having been detected in treasonable designs, a force of 6,000 men under the command of Lieut.-Colonel Dyce, which included "A" and "E" companies of the Sappers and Miners, was ordered to assemble at Adoni. Captain Pears was at Closepett on road work, when he received orders to proceed with his Sappers to Gooty; he at once marched the 32 miles into Bangalore in one day, and left that place again on 13th August, reaching Adoni on 2nd September, whilst the force from Bellary was still two marches off. Captain Pears was appointed Commanding Engineer of the force, whilst remaining in command of the Sappers; Lieut. Dobbie, 29th N.I., and Lieut. J. W. Rundall, M.E., were attached to the Sappers. From 4th to 21st September the Sappers were engaged on the arrangements for the passage of the force over the Tungabhadra at Madaneram. Kurnool was occupied early in October without opposition, the only fighting that occurred being on 18th idem when the Nawab was taken prisoner at Zorapur. Captain Pears with the Sappers remained for some little time at Kurnool; and on 5th December the whole force still at Kurnool paraded when the gallant Subadar-Major Kumarasami of the Sappers was invested with the First Class of the Order of British India.

First War in China, 1840-42.—"A" and "B" companies served throughout the campaign, and "F" company joined the force in January 1842. The officers engaged were:— 1840.

Captain T. T. Pears, M.E., Commanding. Captain W. J. Birdwood M.E., Brevet-Captain F. Cotton M.E., Lieut. J. W. Rundall M.E. (severely wounded). Lieut. J. G. Johnston, (wounded). Lieuts. H. H. Hitchins, Shaw, Doria. 2nd-Lieut. T. Ouchterlony M.E., Ensign Clerk, Asst. Surgeon Jackson.

On receiving orders for service, "A" and "B" companies marched from Kurnool to Madras, 296 miles in 16 days.

The Sappers and Miners were present at the following actions:—

The capture of the city of Tinghai in the Island of Chusan on 5th July 1840.

After the capture of Chusan, Captain Pears returned to Madras. Brevet Captain Cotton being left in command of the two companies of Sappers; Captain Pears returned to China in 1841, sailing from Madras in July.

Hong Kong was taken possession of on 26th January 1841, and the British flag hoisted on it for the first time. 1841.

The Sappers were present at the capture of the Bogue Forts on 25th and 26th February 1841.

The attack and capture of the forts at Canton on the 24th May 1841, the surrender of that city on the 27th idem, and the subsequent operations in the neighbourhood up to the 1st June. Lieut. Rundall was dangerously wounded, and one man wounded in these operations.

The conduct of the two companies employed on this occasion received the warm approval of Major-General Sir Hugh Gough, K.C.B., commanding the expeditionary force, who communicated the same to the Madras Government in a letter dated 6th June.

The following is an extract from the despatch by Major-General Sir H. Gough published in G.O. 1841.

1841. "The two companies of Sappers merited and received my warmest approval x x x x their useful labours called for my best thanks, they were cheerfully prepared to place the ladders for the escalade."

The capture of Amoy on the 26th August, on which occasion the Sappers assisted in landing the guns.

The assault and capture of the city of Tinghai in Chusan on the 1st October. Sir Hugh Gough mentioned the Sappers in his despatch in the following words :—

"The scaling ladders had been brought up on most difficult and rugged heights by the great exertions of the Madras Sappers, and were now gallantly planted under the direction of Captain Pears, who was the first to ascend."

The attack and capture of the city of Chinhai on the 10th October, and the occupation of the city of Ningpo on the 13th idem.

A detachment of the Corps was present at the destruction of the forts covering the Bogue in October 1841.

1842. The winter of 1841-42 was most rigorous, but it is worthy of record that although accustomed to such a climate as that of Southern India, the Madras Sappers not only bore the severity of the winter at Ningpo without any constitutional injury, but appeared to improve in strength and condition under its unwonted influence.

They were present at the repulse of the assault by the Chinese on Ningpo on 8th and 9th March, and at the escalade of the city of Tse-kee on the 15th March 1842, and the assault and capture of the entrenchments near that place on the same day. Sir Hugh Gough in his report writes, that from Captain Pears, the Commanding Engineer, he received the most zealous support.

The attack and capture of the fortified heights commanding Chapoo on the 18th May, and the assault and capture of that city on the same day. Lieutenant Johnston of the Sappers was wounded on this occasion.

Under G.O.C.C. of 9th March 1842 "A," "B," and "F" companies, were increased by one Havildar, one Naick, and 11 Privates per company till further orders.

The following is an extract from G.O.G. 171 dated 20th September 1842 :—

"In the operations recently carried out at Chapoo, the services of the Sappers and Miners were eminently conspicuous, and the Governor-General cordially congratulates the Right Honourable the Governor in Council on the distinguished conduct of this Corps."

A detachment was on board the fleet on the 16th June, when the forts at Woosung were cannonaded and destroyed.

It then landed and accompanied the column under Lieut.-Col. P. Montgomerie, Madras Artillery, to Shanghai, which city was taken possession of without opposition.

On 23rd June, Shanghai was evacuated, one division embarking, whilst another proceeded by land with the guns to Woosung. The force destined for the campaign of the Yang-tse-kiang mustered 9,000 bayonets, exclusive of Marines and Sailors, and was organised into three Infantry Brigades; the Royal and Madras Artillery formed a separate Brigade, whilst the Engineers and three companies of Sappers formed a distinct command under Captain Pears, the Chief Engineer. A detachment of Artillery and one of Sappers was attached to each Infantry Brigade, when they moved against the enemy. At the action and assault of the city of Chin-kiang-foo on 21st July, the Sappers with the 1st Brigade were with the right column, and took part in the attack and pursuit; those with the 2nd Brigade carried the escalading

ladders, and had to cross an open space, exposed to the full fire of a face and flank of the works, and under the direction of Lieut. Johnston they succeeded in planting the ladders in a skilful and resolute manner. Captain Pears, Lieut. and Adjutant Rundall, and Conductor Almond headed the Sappers with the 3rd Brigade, who carried three powder bags (containing 58 lbs. each), they pushed across a stone bridge and gained the gateway of the fort, and succeeded in blowing in the gates. 1842.

A detachment of Sappers was left at Chin-kiang-foo with other troops, whilst the army proceeded to Nankin, where it landed during the 11th, 12th, and 13th of August, and preparations for assault were being made when hostilities were suspended, and on 29th of the month the treaty of peace was signed and ratified. Lieut. L. Hitchens with "F" company remained at Hong Kong, the other two companies sailing for India on 20th December.

The following is an extract from the G.O.G.G. issued by the Governor-General in Council on the conclusion of the war, dated Simla, 14th October 1842:—

"On that occasion,* as on all others, the Madras Artillery and Madras Sappers and Miners maintained the high reputation which has always been attached to their respective Corps in the Madras Army."

The following is an extract from G.O.C.C. dated 9th November 1842

"From the prominent part the Corps of Artillery, Sappers and Miners, and Gun Lascars belonging to the Madras Army have taken in bringing the war to so satisfactory a conclusion by their steadiness and gallantry, you have added fresh laurels to the tree you planted at Assaye, etc., you already on all occasions set an example to your brothers in arms, by the devotion you paid to the wishes of the Honourable the East India Company to volunteer your services whenever the Governor-General of India has required them."

On the 22nd September 1843, G.O.G.G. No. 211 was issued by the Governor-General in Council, granting honorary distinctions to certain Corps of the Madras Army for services performed in China, and the "A" "B" and "F" companies of the Corps of Madras Sappers and Miners then received permission to bear upon their appointments a Golden Dragon wearing an Imperial Crown, and also the word "CHINA."

On the 10th March 1843, the Marquis of Tweeddale, then Commander-in-Chief of the Madras Army, published in G.O.C.C. a despatch from Sir Hugh Gough, acknowledging in the handsomest manner the services of the Madras troops which had formed part of the expeditionary force in China, and from that despatch the following is an extract:—

Singapore, 1st January 1843.

"MY LORD MARQUIS,

No. 3081.

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"3. I cannot part with the Madras troops without expressing to your Lordship in Council the entire satisfaction which I have derived from their conduct on all occasions in the field and in quarters. * * *

"6. The Artillery and Sappers and Miners deserve more particular mention, as they joined me in the Canton river in March 1841, and have borne a gallant part on every occasion when the enemy was in the field throughout the whole war. In mentioning to the Governor-General of India the respective Commanding Officers, I have

specially noticed Lieutenant-Colonel Montgomerie and Captain Pears from whom, in their capacities of Brigadier of Artillery and Commanding Engineer, I uniformly derived the most zealous and efficient assistance."

The number of Sappers and Miners who embarked at Hong Kong in December 1842 to return to Madras on the breaking up of the force was :—

1 Captain	22 Naicks
6 Subalterns	2 Drummers
5 Native Officers	240 Privates.
14 Havildars	

Captain Pears received a Brevet Majority on 23rd December 1842, and was made a Companion of the Bath.

Brevet-Captain Cotton was promised a Brevet Majority as soon as he obtained his Captaincy, for his services at Canton whilst Captain Pears was absent. He was thanked for his services on that occasion, and also for his services at the capture of Amoy. He was promoted Captain on 10th December 1847, and received his Brevet Majority next day.

Subadar-Major Kumarasami, Native Aide-de-Camp to Sir Hugh Gough, particularly distinguished himself, and was brought to the notice of the Governor-General; he was promoted to the 1st Class of the Order of British India for his services in China.

The "F" company remained in garrison at Hong Kong until October 1846. On their leaving China to return to India, Major-General Hon. D'Aguilar, commanding the forces in China, reported :—

"It only remains for me to add my entire approbation of the regular and orderly conduct of the Madras Sappers and Miners, under the immediate command of Lieut. Hitchens.

The Madras Sappers under Lieut. Hitchens have rendered important services in carrying on the military works of this colony, and the cheerful and soldierlike manner in which they have invariably performed their arduous duties, merit the Major-General's commendation."

1810. **Precedence.**—G.O.C C. of 25th December 1840, laid down that :—
"The Engineers and Sappers and Miners take post on the right of the Line, and on the left of the Artillery. Her Majesty's Regiments of Foot are next."

Operations in Kelat and First Afghan War, 1840-42.—
"C" company under the command of Lieut. T. F. V. Outlaw. 26th M.I., with Lieut. C. A. Orr, M.E., and 2nd-Lieut. A. J. M. Boileau. M.E., left Belgaum on the 9th November 1840, and arrived at Karachi on 4th December.

1841. January 1841, the Company marched to Bagh,
February do. do. do. Kaggak,
March do. do. do. Quetta,

being the smallest body of British troops that ever passed through the Bolan Pass, a defile 60 miles long, by deliberate marches. Only one third of the Company was armed, the rest of the men carrying working tools. From March to July they were employed on the Quetta-Kelat road. In May and June a detachment under Lieut. Orr accompanied a force to Nushki. In October the company returned to Sibi and Dadar with the H.Q. of the force, with the exception of Jemadar Raman and 22 men who accompanied a small party of Infantry and Artillery to explore the country in the direct line from Quetta to the seaport of Sonmiani, and thence to Karachi. About this time Captain Henderson, M.E., joined the company and took over the command. The Headquarters of the company continued at Sibi and Dadar till April 1842, but detachments were employed on various works all over the country

from Sibi to Karachi. In April the company proceeded again to Quetta, leaving however detachments in Kachi and Scinde, and remained there till September; but a detachment consisting of Havildar Amarabathi (afterwards promoted Jemadar), 1 Naick, and 28 Sappers accompanied General England's and afterwards General Nott's force. They were present at the following actions:—

Affair at Hykulzi on 29th April.

Affair at the Khojak Pass in May.

Relief of Khelat-i-Ghilzai in May.

Action at Turnak on 30th August.

Capture of Ghazni on 5th September.

Affairs on the Kabul road 14th and 15th September.

Affairs on the Kabul-Jellalabad road 12th to 25th October.

They reached Firozpur on 23rd December with General Nott's force, and quitted that place for Sukkur on 5th January. 1843, to open the road for Leslie's Horse Artillery. From Sukkur they went down the Indus in boats to Hyderabad, and rejoined the H.Q. of the company on 24th March in time to take part in the battle of Hyderabad. 1843.

War in Scinde, 1843.—"C" Company, under Brevet Captain R. Henderson, M.E., took part in this war, during which the following officers also served with the company. Lieut. T. F. V. Outlaw, 26th M.I., Lieut. C. A. Orr, M.E., 2nd-Lieut. A. J. M. Boileau, M.E., Asst. Surgeon Carlow (died at Kotra).

The H.-Q. of the company had returned to the plains of Kachi with General England's force when it retired, and moving *via* Sukkur crossed the Indus to Rohri with the force under Major-General Sir Charles Napier. The latter decided to attack Imamghar, which was in the very heart of the desert, eight marches away, whilst its exact position was unknown. Napier selected 350 men of the 22nd, two 24 pr. howitzers, Captain Whitler's Camel Battery, 200 Scinde Irregular Horse, and 30 Madras Sappers; officers and men were all mounted on camels. Starting at 2 a.m. on 6th January, they marched 22½ miles, no forage was obtainable, so 150 of the Scinde Horse were sent back; Imamghar was reached on the 12th, but though the fort was very strong, was well provided, and had been garrisoned by a force six times the strength of the force brought against it, Mahomed Khan had fled two days before. Brevet-Captain Henderson and 2nd-Lieut. Boileau of the Corps accompanied this expedition. During the next three days the Sappers mined the fort and utterly demolished it, and on the 15th the force started to return.

The company was present at the battle of Meanee on 17th February 1843, when Henderson with 50 men covered the flank of the guns on our right, and they were engaged hard throughout the battle. On 24th March on the morning of the battle of Hyderabad, "C" Company moved at the head of the advanced guard during the advance; when the troops deployed they were attached to the heavy battery, one sub-division being told off to each gun; one Corporal was wounded. The company was sent with the leading troops in pursuit, and was present at the surrender of Omerkot on 4th April. On the conclusion of the war they remained in Scinde till 25th March 1844, when they embarked at Karachi to return to the Madras Presidency. During this year, detachments were sent to all the principal stations in lower Scinde, mainly for building work. A Naick's party accompanied Major-General Simpson on an expedition, and on his return the General in a note to Lieut. Outlaw expressed his high appreciation of the Naick and his party. 1844.

For this campaign Captain Henderson received a Brevet Majority, and was made a Companion of the Bath, whilst the Honours "MEANEE"

1844. and "HYDERABAD" were granted to the company under G.O.G.G. of 11th April 1854.

On the return of the company to the Madras Presidency in May 1844, the C-in-C. of the Madras Presidency issued the following G.O.C.C. No. 48, of 9th May 1844 :—

"The "C" Company of Sappers and Miners, under the command of Captain Henderson, having disembarked at Cannanore, the Most Noble* the Commander-in-Chief desires to offer to both officers and men his most cordial congratulations on their return to their own Presidency after their long and highly honourable service in Scinde."

"The "C" Company of Sappers and Miners was ordered from Belgaum to Scinde in November 1840, and shortly after its disembarkation at Karachi proceeded to join the force at Quetta, a distance of about 500 miles."

"Under the command of Lieutenant Outlaw of the 26th Regiment M.N.I., the company, then having with it not more than 46 fire-locks, deliberately marched through the Bolan Pass, and after reaching Quetta, was occupied in various military works until the close of 1841 when it again moved into the low country."

"Its Head-Quarters were then stationed at Dadar, while detachments were sent out to all parts of the country from Sibi to Karachi. In April 1842, the company again ascended the Bolan Pass and was employed in constructing fortifications at Quetta, from which a detachment, having been sent forward with the troops under Major-General England, joined Major-General Nott's force at Kandahar. In September the company retired from Quetta with Major-General England, and subsequently joined the force under Major-General Sir Charles Napier, under whose command it was engaged in the destruction of the fort of Imamghar, in the battles of Meanee, and Hyderabad, serving in the first as infantry of the line, and at the capture of Omerkot."

The detachment left with Major-General Nott at Kandahar, after having been engaged in the second affair at Hykulzi under Major-General England, was employed at Kelat-i-Ghilzai, in the operations at Kandahar, in the action with Shumshu Din Khan, at Ghazni, at Kabul, and in the movement through the Khaibar Pass. It reached Ferozpur on the 23rd December 1842, and marched again on the 5th January 1843 with "Leslie's" troop of Horse Artillery to Sukkur.

"From Sukkur it proceeded in boats to Hyderabad, which place it reached on the 3rd March, and was present with the rest of the company at the battle of Hyderabad.

"These services have been already honourably noticed by the distinguished officers under whom this gallant little band has been principally employed, more especially by His Excellency Major-General Sir Charles Napier, G.C.B., and the Commander-in-Chief has great pleasure in placing on the records of this army the following extracts from Sir Charles Napier's despatches and other documents :—

Despatches from Major-General Sir Charles Napier.

Meanee 18th February 1843.

"Captain Henderson, of the Madras Engineers, took a standard, and did good service with his excellent little band of Sappers and Miners, not only in this engagement, but through the campaign. His Lieutenants, Boileau and Outlaw, have also distinguished themselves."

Dubba, near Hyderabad, 24th March 1843.

"Nor must I omit to mention the labours of Captain Henderson, and Lieutenants Outlaw and Boileau, with their hardy little band of

*The Marquis of Tweeddale.

Sappers, whose labours enabled the heavy 8-inch howitzers to come up 1844, into action."

From Lieutenant-Colonel Leslie, C.B., Camp Hyderabad, 23rd October 1843:—

"I do hereby certify that Jemadar Amarabathy of the 3rd Company, Madras Sappers and Miners, was in charge of a party of 30 men of the above company serving in Afghanistan, and was for a long time attached to the troop under my command, and marched with his party at the head of the troop through the whole of that difficult country. I have considered it a point of duty to give the Jemadar (who was then only a Havildar) this certificate as a record of my high opinion of his services and zeal. I have never met a more willing or efficient man. He and his sturdy and hardworking comrades were ever ready and always successful in making a road for the guns over the most difficult ground, and, having their tools always in their hands, their work was never delayed. In short I am anxious to bear testimony to the unwearied zeal of the whole party, and wish them success with all my heart."

General Orders by His Excellency Major-General Sir C. J. Napier, G.C.B., Governor of Scinde.

Head-Quarters, Karachi, 25th March 1844.

"Captain Henderson and Officers, Non-Commissioned Officers, and Privates of the Madras Sappers and Miners. You have earned laurels in Scinde. No troops have more honourably conducted themselves. Associated in all the glories of the Bombay Army, you leave this country regretted by your companions. You have served under my immediate command for a year and a half. Your labours during our march into the desert were greater than those of any other troops, and were undergone with spirit. You did your duty bravely in the battles of Meanee and Hyderabad. In the former of these two actions you were conspicuously placed, and nobly acquitted yourselves. I regret to lose you, but justice to you after your hard service, has made me send you to your own homes, where an honourable reception awaits you. Go where you will, you will be attended with my sincere regards and my heartfelt respect. To my friend Captain Henderson I have given a letter for the Commander-in-Chief of the Madras Army that his Lordship may be aware of your worth."

"To these most honourable testimonials the Commander-in-Chief can only add this public expression of his Lordship's acknowledgments to both officers and men for the admirable manner in which they have maintained the reputation of their own distinguished Corps, as well as of the army to which they belong, and for the additional proof which they have thus afforded, that wherever their services are called for, the Madras Sepoys will never fail to merit fresh distinction as brave and faithful soldiers.

"This order to be translated and read on parade to every native Corps and detachment of the Madras Army."

C. A. BROWNE,
Acting Adjutant-General of the Army.

The following is an extract of a letter from Sir Charles Napier, dated 14th July 1849, in which he makes honourable mention of Subadar Tandavarayan of the Sappers:—

"At the battle of Meanee, Subadar Tandavarayan led his company most gallantly down into the bed of the Fullailee; he followed Major Henderson, his Commanding Officer, who for that gallant action received

1844. the Companionship of the Bath. At this time, the post where these two brave men led, was about the most dangerous part of the field. I saw with admiration the boldness of the behaviour of the company and its commander, and the Subadar was at his side on all occasions.

"This old warrior's courage, energy, and great bodily exertions excited my admiration, and Major Henderson can confirm my opinion of him. If I am entitled to the red ribbon of the Bath, he is to the Order of Merit."

Lieutenant-General Sir James Outram, in a letter dated at Lucknow on the 4th April 1858, spoke of this company as follows:—

"Upwards of fifteen years ago I knew the "C" company, Madras Sappers and Miners, in Afghanistan, and I then considered them a model body of soldiers, and most assuredly they have not deteriorated since then."

1841. **Appointments.**—G.O.C.C. dated 23-3-1841, laid down that the Commandant of the Corps might retain his appointment until promoted to Major-General, or to Regimental Colonel, or to Lieut.-Colonel Commandant in receipt of Off Reckonings, or to Acting Chief Engineer.

Working Pay, Alteration of Establishment, and Sapper Allowance.—Under G.O.G.G. 165, dated 30-6-1841. Working pay was granted for those days when men actually worked, at the following rates:—

Subadar	5 annas per diem.
Jemadar	4 " "
Havildar	2 " "
Naick	1½ " "
Private, 1st class	1 " "
Private, 2nd class	10 pies.

At the same time, 1 Drill Havildar, 1 Drill Naick, and 1 Bugle Major were added to the Corps, and 15 men per company were reduced.

The offices of Adjutant and Quarter-Master were united, as in the Artillery, with similar allowances.

An allowance of Rs. 30 per mensem was sanctioned for Subaltern Officers doing duty with the Corps, for keeping up books and instruments.

Under G.O.G. dated 15-10-1841, the grant of working pay at the rate established for Privates of the 2nd Class, was extended to Privates of the Third and Fourth Classes.

1844. **Dress.**—Under G.O.C.C. of 22-2-1844, white covers for Shakos and Forage caps were introduced, "to be worn on the line of march, and on sentinel duty, or other occasions when exposed to the sun."

Musketry.—G.O.C.C. dated 12-11-1844, lays down the musketry course for Cavalry, Infantry, and Rifles, the greatest distance at which they fired being 150 yards, 200 yards, and 250 yards, respectively; no course was apparently thought necessary at that time for Sappers and Miners.

Employment.—From April 1844 to December 1854, companies were employed at Aden on the fortifications, "D" company moved there in April 1844, and from November 1845 to April 1852 there were always two companies there, and occasionally for periods of two or three months, three companies. "D" and "E" companies were present at Aden in August 1846, when the place was attacked by the Arabs.

45. **Recruit Depot.**—Under G.O.G. 98, dated 30th May 1845. A Recruit Depot, of 100 men extra to the establishment of the Corps, was formed at the Head-Quarters of the Sappers and Miners.

“The recruits to be under the charge of the Adjutant, and are not to be brought on the rolls of companies, until drafted as required, when fit to join the ranks.” 1845.

Under G.O.G. of 30th June 1846, the Recruit Depôt was increased by two Havildars and four Naicks, and decreased by six Privates.

Pensions.—Sanction was accorded by G.O.G. No. 244 of 1845, for the heirs of Subadars and Jemadars, enlisted before 1st January 1834, to receive a pension of half the pay of the deceased officer.

Allowances.—It was laid down in G.O.G. 257 of 23rd December 1845, that the Adjutant and Quarter-Master of the Corps, as well as any officer of Engineers who was in receipt of Staff Allowance, should not be entitled to Palki Allowance.

Organisation, Employment, Arms, Equipment, and Instruction of the Corps.—The Corps was reorganised by G.O.G. 163, dated 17th July 1846, under the following rules :— 1846.

1. The Head-Quarters of the Corps to be stationed at Mercara, moving annually during the proper season, to the river at Fraserpet or elsewhere, for such pontoon and bridge practice, as may be comprised in the course of instruction to be arranged by the Chief Engineer, and approved by the C-in-C.

2. Suitable buildings, required for the accomodation and instruction of the men, to be erected in communication with the Officer Commanding the Corps, and sanctioned by Government.

3. Two companies, exclusive of recruits, to be always stationed at Head-Quarters for instruction in all such branches of Military and Civil Engineering as may be deemed requisite to render them conversant with all duties which they may be called upon to perform in Garrison or in the Field.

4. These companies to be relieved biennially, one company being relieved each year, so that the whole Corps may pass through its course of instruction at regular intervals.

5. The remaining companies to be employed upon such Public Works, Civil or Military, as may be ordered by Government on the recommendation of the Chief Engineer.

6. Except in cases of emergency, and with the previous sanction of the Commander-in-Chief, no party under the strength of a complete company is ever to be employed on detached duty extending beyond the period of one month; and under no circumstances is any party to be detached under the strength of a complete section.

7. Excepting only for Field Service, no detachments of any kind are to be made from the Head-Quarters of the Corps, unless when there may be parties available in excess of the two companies under instruction.

8. Each company to be complete in itself, and to be prepared for the performance of every duty for which it may be required, independently of the Head-Quarters of the Corps.

9. The European Sergeants and Corporals to be borne on the Adjutant and Quarter-Master's establishment, and to be detached as may be required, under the orders of the Commanding Officer.

10. If found unfit for the Corps of Sappers and Miners, from unsteadiness or other causes, they will be liable to removal by authority of the Commander-in-Chief, to the Artillery or Infantry, according to the terms of their original enlistment.

11. They will be eligible for advancement in the Ordnance and other Public Departments, and Sergeants attached to Superintending Engineers of Divisions will be selected exclusively from the Sappers and Miners.

12. The Corps is to stand in the same relation to the Commander-in-Chief, and different military authorities, as a Regiment of the Line.

13. All correspondence of the Corps is to be addressed, as in other Regiments, through the Division or other intermediate authorities, to the A.G., Q.M.G., or other officer with whose Department it may be connected.

14. When employed in the Field, the officer at the head of the Q.M.G.s Department will communicate with the Officer Commanding the Sappers regarding work properly appertaining to the duty of Pioneers, and the latter will adopt the means at his disposal to attain the object required.

15. The Corps to be armed, and equipped with tools, as in the annexed tables.

16. On Field Service the packs will be carried at the Public Expense.

17. The system of instruction at Head-Quarters will be regulated from time to time by the Chief Engineer, under the sanction of the Commander-in-Chief, to whom the Chief Engineer will submit his proposed course, annually, in the month of January, through the Adjutant-General.

18. A piece of waste land for conducting the practice will be allotted to the Corps in addition to what is required for the Regimental Lines, and other Buildings.

19. Periodical grants of money for the purchase of materials, to an extent which will be fixed from time to time by Government, will be sanctioned on contingent bills to be passed by the Chief Engineer.

20. The undermentioned Artificers and Maistries to be maintained at Regimental Head-Quarters at the usual rates of pay and batta allowed to these classes in the Ordnance Department, for the instruction of the men in their several trades. They are to be borne on the Adjutant and Quarter-Master's establishment.

1 Carpenter Maistry	1 Smith Maistry
1 Bricklayer do.	1 Stone Cutter
1 Cooper	1 Armourer

21. The other artificers are to be attached to and borne on the rolls of their respective companies. They may, however, when circumstances require that they should be otherwise disposed of, be employed with any portion of the Corps; and while absent from their own companies and doing duty with another, or at Head-Quarters, or proceeding on duty from one station to another, they will not be liable to forfeiture of pay. Each artificer so absent from his own company to be furnished with a certificate that no substitute has been, or will be engaged in his place.

22. Officers in charge of detached parties, whether belonging to the Corps or otherwise, are required, in the execution of all duties connected with the men, to adhere strictly to the Standing Orders furnished for their guidance.

23. Movements, otherwise than of individuals, will be under the direction of the Quartermaster-General, who will also regulate the periodical reliefs.

24. Camp equipage, and carriage for stores and materials will be supplied on indents passed by the Q.M.G.

25. The Head-Quarters of the Corps and all detached companies, are to be inspected annually. Returns and reports, as required, to be filled up by the Inspecting Officer, will be furnished by the Adjutant-General.

26. Every Engineer Officer, on his first arrival in India, is to be posted to the Corps of Sappers and Miners, and to join at Head-Quarters, where he is to do duty until reported by the Commanding Officer to be qualified for detached employment.

27. Officers of Infantry appointed to do duty with the Corps of Sappers are to be considered Regimental Officers equally with the Officers of Engineers; with whom they will take rank according to the dates of their commissions in the army, with the exception that they will not have any claim to the command of the Corps, which, in the absence of the permanent Commanding Officer, will devolve upon such one of the Officers of the Corps as the Commander-in-Chief may specially appoint. 1846.

28. No Engineer or other officer who may casually fall into the charge of, or be appointed to do duty with any portion of the Corps on Field Service, or other occasion, shall have any claim to the command of the Corps, though senior to the permanent Commanding Officer, who will remain in undisturbed possession of all his rights and privileges as Commanding Officer.

29. All officers appointed to do duty with the Sappers are in the first instance to join the Head-Quarters, and until reported to the Adjutant-General to be duly qualified, they will not be eligible for employment on detachment.

30. Officers appointed to do duty with the Sappers will not be liable to removal to join their own Corps when the latter may be ordered on Service.

31. Officers attached to the Corps of Sappers, when employed with detachments in the superintendence and execution of Public Works, and not in receipt of any Staff Allowance, are to receive as extra remuneration the salary of 2nd Asst. Civil Engineers, or Rs. 100 per mensem, while so employed.

32. A European N.C.O. is allowed to be placed in charge of the stores of a detachment on the usual working pay of an N.C.O.

33. Task work is to be preferred whenever practicable, the quantity being regulated by the character of the work, and what a good labourer can perform. When task work is not applicable, six hours for Europeans, and eight hours for Natives, to be reckoned as entitling to payment for a day's work; and this will be the ordinary limit of labour, but liable of course to be extended as circumstances may render necessary when in the Field or otherwise.

34. Officers of the Sappers are not to be considered available for Line or Station duties, except on special occasions when their employment on such duties is essential to the benefit of the Public Service.

35. Neither are the men of the Corps of Sappers liable to be called on to perform ordinary cantonment work, such as making or filling up ditches or drains, or the construction of cantonment roads, except in cases of emergency and importance, when the work cannot be effected without their aid, and for which the previous sanction of the Division or Force must be obtained.

36. Officers in charge of Public Works, having parties of Sappers, commanded by a European officer, employed under their orders, are prohibited from interfering in the interior economy of such parties. Their attention is to be confined to the right employment of the men with reference to the work, while the duty of detailing the parties available for employment rests with the Regimental Officer.

37. The permanent Commandant, and Adjutant and Quarter-Master, will be nominated to Government by His Excellency the Commander-in-Chief.

1846. 38. Permanent Establishment:—

1 Commandant	1 Havildar-Major
8 Subalterns	24 Havildars
1 Asst. Surgeon	48 Naicks
1 Adjutant and Quarter-Master, (Non-effective Staff).	12 Buglers
1 Conductor	630 Privates
1 Sergeant-Major	6 Lascars
1 Quartermaster-Sergeant	6 Pakhalis, or 12 Bhistis
12 Sergeants	6 Carpenters
12 Corporals	6 Smiths
12 Second-Corporals	6 Hammermen
6 Subadars	6 Bellows Boys
6 Jemadars	48 Recruit and Pension Boys

1 Carpenter Maistry	} To remain at Head-Quarters for the instruction of the men.
1 Smith Maistry	
1 Bricklayer Maistry	
1 Stonecutter	
1 Cooper	
1 Armourer	

1 Choudry	1 Second Dresser
2 Peons	2 Toties
1 Asst. Apothecary	

For the Depot at Head-Quarters:—

2 Havildars	94 Privates
4 Naicks	

Additional for the company in China 1 Havildar, 1 Naick, 26 Privates (but these were reduced by G.O.C.C. of 11-1-1847).

Non-effective Staff:—

1 Subadar-Major	1 Drill Havildar
6 Pay Havildars	1 Drill Naick
6 Colour Havildars	1 Bugle Major

The Conductor is charged with the Quarter-Master's Department under the Adjutant and Quarter-Master.

39. Arms and accoutrements. N.O.s, B.N.C.O.s and Buglers to carry swords.

The N.N.C.O.s and men to be armed with Carbines Sapper with black slings; black waistbelts with frog and cap-pouch, and black pouch belt with 40 round pouch.

40. In each company the men to carry tools as follows:—

53 Working knives	52 Axes hand
23 Shovels or Mamooties	53 „ pick
4 Crowbars	20 „ felling

The working knives and hand axes to be carried on the belt with sheaths, and the other tools on shields.

The following spare tools to be carried for each company:—

30 Working knives,	30 Axes, hand
16 Shovels or Mamooties	12 „ felling
2 Crowbars	30 „ pick
4 Drag ropes	6 Sledge hammers
6 Jumpers	3 Needles
3 Tamping bars	3 Sap hooks

41. The tools to be equally divided among the four sections.

42. Each company also to be provided with :—

1 Chest Carpenter's tools	50 lbs. of Europe Steel
1 Chest Smith's tools	15 lbs. of Brass
1 Grindstone	100 lbs. of Country Steel
2 lbs. of Chalk	15 lbs. of Copper
2 lbs. of Glue	1 lb. of Borax.
100 lbs. of Iron	

43. The tools and other stores allotted above are calculated for maintaining the Corps in an efficient state under ordinary circumstances only, and as it is impossible to provide for all contingencies, the Officer Commanding the Corps or Detachment therefrom, is permitted to indent in the usual manner for such further supply, without limitation to description or quantity, as the nature of the work on which they may be employed may render indispensable.

Appointments.—Under G.O.G. No. 251 of 14th November 1846, it was ordered that no subaltern officer should be appointed to the command of a company until he had passed the prescribed Hindustani examination, unless there was no qualified officer available, and that any subaltern officer so appointed should not draw the Company Command Allowance until he had passed.

Allowances and Appointments.—G.O.G. No. 259 dated 24th November 1846, laid down that the Commandant of Sappers and Miners should be either a Captain or Subaltern; and authorised the following allowances :—

Commandant	Rs. 400
Company Commander	30
Mess	120
Subaltern Officer for upkeep of books and instruments	30
Do. conveyance allowance	30
For repair of arms per company	1

Pensions.—The rates of pension were laid down under G.O.G. 1848. 117 of 29th August 1848, as follows :—

	Enlisted before 1-5-1837.	Enlisted after 1-5-1837.	Wound pension if enlisted after 16-8-1842.	Superior pension for over 40 years' service.
Subadar ...	Rs. 25	Rs. 25	Rs. 25	Rs. 40
Jemadar ...	" 12/4/-	" 12	" 12	" 20
Havildar ...	" 7	" 7	up to " 7	" 12
Naick ...	" 7	" 7	" 7	" 12
E. or E.I. Bugler enlisted before 31-1-1840	" 7	" 7	" 10	" 12
E. or E.I. Bugler enlisted after 31-1-1840	" -	" 7	" 7	" 12
Native Bugler ...	" 7	" 4	" 4	" 7
Private ...	" 4	" 4	" 4	" 7

and the same order fixed the family pensions :—

	if killed in action, or died within 6 months from wounds received in action.	if entertained before 1-1-1834, and died on foreign service, or as result of foreign service.	if entertained after 1-1-1834, and died on foreign service, or as the result of foreign service.
Subadar ...	Rs. 36	35, 26/4, or 21 according to class	Rs. 26
Jemadar ...	" 13/13/-	Rs. 12/4/-	" 8/8/-
Havildar ...		" 5/4/-	" 4/8/-
Naick ...		" 4/6/-	" 3/8/-
Bugler ...		" 4/6/-	" 2/12/-
Private ...		" 3/14/-	" 2/12/-
Pakhali or Bhisti ...		" 3/8/-	" 2/8/-

1849. **Instruction of Officers.**—G.O.C.C. No. 19 dated 28-6-1849, ordered that:—

“The following rules are established for the instruction of officers of Infantry appointed to do duty with the Corps of Sappers:—

1. No officer shall be eligible for appointment to do duty with the Sappers and Miners who is not in every respect qualified to command a company in his own regiment; nor should any offer himself as a candidate unless he has both talent and taste for engineer duties, a determination to study, and a fair knowledge of mathematics and military drawing.

2. Six months after an officer has joined the Head-Quarters of the Corps, he will be required by the Commandant to execute with sufficient accuracy a reconnoitring and trigonometrical survey, and to make a section of any piece of ground that may be pointed out, as well as to pass a satisfactory examination in vulgar and decimal fractions, the use of logarithms, practical geometry, mensuration, and plain trigonometry, so as to enable him to make the ordinary calculations connected with measurement of land, heights, distances, etc.

3. At the end of twelve months after joining, an officer is expected to be able to plan, trace, and superintend the construction of batteries and field works, such as are generally executed by Sappers and Miners on Service.

4. An officer unable to pass satisfactory examinations at either of the appointed periods will be remanded to his own regiment.

1850. **Dress.**—Amongst other regulations published on the subject of officer's dress in G.O.C.C. dated 6-8-1850, is the following:—

“Officers doing duty with the Sappers and Miners wear the uniform of their own Corps, with the addition of a red stripe down the cloth trousers, to correspond with the dress of the men.”

1851. **Artificers.**—G.O.C.C. dated 4-7-1851, substituted “an efficient Chuckler” for the Carpenter and Smith Maistries at Head-Quarters of the Corps.

1852. **Second War in Burmah, 1852-53.**—“A” “B” “C” and “E” Companies with the following officers were engaged in the War:—

Brevet-Captain J. W. Rundall M.E., Commanding to 12-11-1852, (wounded, died at Prome).

Lieut. J. Carpendale M.E., Commanding after 12-11-1852.

M.E.
Lieut. R. F. Oakes
„ H. J. Rogers
„ C. V. Wilkieson
„ J. G. Ryves
„ G. Dennison (invalided)
„ H. Vaughan
„ J. Mullins
„ J. O. Mayne
„ T. E. Gallagan

M.N.I.
Lieut. H. Mackintosh
„ B. Ford (wounded)
„ G. M. Carter
„ F. J. Wilson
„ V. I. Shortland
„ W. G. Farquhar
„ A. M. Harris
„ H. Allen
„ G. I. R. Furlong
„ E. S. Daniel

Assistant Surgeons J. Williams, G. Mackay, and W. H. Boutflower.

Two companies of the Corps embarked at Madras before 25th March 1852, under Captain W. J. Rundall, and they were present at the capture of Martaban on the 5th April.

On the 8th April they were joined at the mouth of the Rangoon River by two companies under the command of Lieut. B. Ford, 12th Regiment M.N.I. The force landed near Rangoon on the 12th.

The Madras Sappers formed up with ladders in rear of the left flank of the right column, and after the artillery had pounded the White House Stockade a storming party was formed of H.M. 51st, and the Madras Sappers under Captain Rundall. Whilst moving on to join the leading division the Sappers came under such a heavy fire that they were obliged to ground the ladders and return the fire. They silenced the enemy and resumed the advance. They shewed conspicuous bravery; in one place three of them reared a ladder after four had already been shot down beside it. On 14th, the Shway Dagon Pagoda was stormed and the city of Rangoon fell. During the action, volunteers were called for from "A" Company of the Sappers to carry forward tools across a large plain under a heavy fire; Naick Muniah and Private Ramasami at once volunteered, and succeeded in getting across and returning safely. The committee afterwards assembled to decide on claims for the Order of Merit reported that these two men "evinced conspicuous and undoubted gallantry in voluntarily facing great danger in a matter of duty," and they both received the 3rd Class of the Order of Merit. Captain Rundall and Lieut. Ford were both slightly wounded during these operations. Four men were also wounded. Captain Rundall received the thanks of the Governor-General in Council, conveyed in G.O.G.G. dated 28-4-1852. 1852.

Sixty-seven Sappers under Lieut. Ford were present at the storm and capture of Bassein on 19th May; after the town had been taken, there still remained a fortified position to the south of the town, and the Sappers formed part of the party sent to attack this; when within 15 yards of the work, the enemy opened a heavy fire, and several officers were shot down, Lieut. Anstey, 9th N.I., and Lieut. Ford mounted the parapet in the most gallant manner. Whilst pursuing the enemy Naick Muttuvirapan of the Sappers was in advance, and the Burmese facing about, he charged them, shot one and bayoneted two; for this he received the 3rd class of the Order of Merit.

Lieut. Ford was mentioned by Major Errington of H.M.s 51st Regiment L.I., commanding the troops engaged, as having behaved in the most gallant manner. Lieut. Ford was thanked also in G.O.G.G. of the supreme Government dated 5th June, of which the following is an extract:—

"The Governor-General noticed with approbation the gallantry and good conduct of the Officers, N.C.O.s, and men of the * * * and Madras Sappers and Miners."

On 3rd June a small expedition, including a detachment of the Corps under Lieut. Macintosh, left Rangoon for Pegu, they stormed the pagoda there, destroyed the fortifications, and returned to Rangoon on 5th. On 26th September the Sappers started up the river for Prome in the "Medusa," and on 9th they disembarked near Prome, which was evacuated by the enemy during the night. During November there were only trifling skirmishes, but several of the Sappers died of cholera, whilst Captain Rundall also died on 12th November, and was succeeded by Lieut. John Carpendale in the command of the Madras Sappers. On 19th a column embarked to capture Pegu again as it had been reoccupied by the Burmese, a detachment of Sappers under Lieuts. Shortland and Harris accompanied this column; they landed below Pegu at 4 a.m. on 21st, and the Guns and Sappers were sent to the front, the latter to clear a track through the high grass and jungle. By 1 p.m. Pegu was in our hands again, and by the 24th most of the troops had returned to Rangoon. 500 men including 40 Sappers under Lieut. Harris were left to garrison Pegu; the enemy returned to the attack on 24th November and continued with little intermission till General Godwin relieved the garrison on 14th December. On the 11th two

1852. gunboats had arrived at Pegu from Rangoon with stores and ammunition, but they were driven back with the loss of 32 men. During the defence of Pegu the Sappers had two men wounded.

Major Hill commanding the garrison reported :—

"Lieut. Harris, Madras Sappers, has proved himself to be a most efficient Sapper Officer."

On 17th December, General Godwin moved out of Pegu with 1262 men, including 30 Madras Sappers under Lieut. Harris, and had some skirmishing with the enemy till he returned on 19th, but the Burmese would not stand.

The General said in his despatch :—

"To x x x and Lieut. Harris of the Sappers who rendered important assistance, I am much indebted."

The Sappers were also present during the Burmese attack on Prome on the night of 8th December.

In connection with the work done by the Sappers in entrenching the position at Prome, the following remarks made by Lieut. Laurie, M. Artillery, in his narrative of the Burmese War may be quoted :—

"We cannot omit in this chapter to bring to general notice the admirable conduct and untiring exertions of a small body of the Native Army, men who although they had been broken down by disease, had rendered the most valuable service previous to the above night attack, in the construction of breastworks, batteries, abattis, parapets, bridges, and roads; the small body of Madras Sappers worked with the right spirit of soldiers."

1853. On 4th January 1853, Brigadier-General Steel embarked at Rangoon with a force of 2100 men, including a company of Madras Sappers about 70 strong, under Lieuts. Shortland and Farquhar, for Martaban; this place was reached on 5th, and on the 14th Steel advanced towards Tonghoo. Shwaygyin was reached on 11th February and more than half the column being left there, a light division 900 strong, including 50 Sappers under Shortland, pushed on to Tonghoo, where they arrived on 22nd and occupied the fort, the Burmese troops having fled, leaving 24 guns and 121 jingals in the fort.

The Brigadier in his despatch said :—

"The Company of Madras Sappers & Miners has maintained their well earned name, in overcoming the many difficulties of the route of march."

In the middle of February, Sir J. Cheape moved from Prome with 1500 men, including 70 Sappers under Lieut. Mullins, with Lieut. Trevor B.E. attached, against Myatun, to retrieve the disaster at Donabyo. The force landed at Henzada (35 miles north of Donabyo), and leaving that place on 22nd, arrived near Donabyo on 28th; here Sir J. Cheape waited for reinforcements from Rangoon. He advanced again on 7th March, and from 5 p.m. that day till midnight on the 8th-9th, the Sappers were employed in rafting the column over a stream 130 yards wide. They marched again on 9th, and that night bridged a stream 50 yards wide; at daybreak on 10th the troops and light baggage passed over, and the bridge was then broken up into rafts, and the guns got across by 4 p.m. On 12th, the way being lost and rations running short, the column returned to Kyontanau, but rations were brought up from Donabyo, and on 19th the stockaded position of Myatun at Kyoukazin was reached and stormed. Lieut. Trevor and several Sappers were wounded. Lieut. Mullins brought to the notice of the Brigade-General that "Lieut. Trevor B.E. was the first to enter the stockade on the 19th, and I received most valuable assistance from him, during the whole of the advance on Kyoukazin."

Lieutenant Mullins and the Sappers were mentioned in Sir John Cheape's despatch of the 25th March 1853, in the following words:— 1853.

"The Sappers, throughout the expedition, worked in front of the column under the protection of the advanced guard, which practically consisted of skirmishers, there being no room for any formation until the Sappers had cut a road through the jungle. Piling and unpling arms perpetually was found to be very troublesome, and carrying arms as well as tools an additional fatigue. Consequently the Sappers' arms were placed in a cart, and the men on more than one occasion entered stockades with the storming party, with felling axes and dhas as their only weapons. On the 19th March the men had to cut a road all along the front of the stockade, and at a distance of from 35 to 40 yards only from its face, under a fire of great severity, which did not cease for a moment until the stockade was stormed. Their work throughout was most laborious, for in addition to clearing the way, which involved cutting through and removing large trees, levelling the ground, &c., from morning until night, or constructing rafts and bridges for crossing the nullahs, they were called upon to provide for the safety of the piquets and outposts, and sometimes their work was not over until some hours after sunset. No men could have done better, or have been more cool and steady under fire, and the circumstances of the expedition made their services invaluable."

"To Lieutenant Mullins and the detachment of Madras Sappers and Miners the greatest praise is due; the work executed by the men was most laborious, and the zeal and talent with which their energies were directed by Lieutenant Mullins was most creditable to him. He was ably seconded by Lieutenant Trevor, and I am mainly indebted to these officers and the men under them for enabling the troops to reach the enemy's position."

The difficulties with which the force had to contend are described in the original report of Lieutenant Mullins, dated 24th March 1853, from which the following are extracts:—

"On the 7th instant the Sappers having completed at Donabyo the necessary equipment for our advance against Myatun's position at Kyoukazin, we marched that afternoon with the force, taking our position immediately in rear of the advanced guard.

"On reaching Akyu the same evening at sunset, it was considered advisable by the Brigadier-General to form rafts for crossing the lake (beyond which our line of march lay) immediately. A favourable spot having been selected for this purpose, and the carts containing the rafts having come up, the Sappers, though under a considerable fire of musketry and jingals, formed a raft for the passage of the guns and troops in about two hours.

"By two hours after daybreak on the morning of the 8th, the second raft was likewise completed under a dropping fire. The rafts having been rowed up to a point favourable for the embarkation of the troops, and a fog, which had previously obscured the opposite bank, having cleared off, the Brigadier-General directed the passage to be commenced. The two rafts filled with troops were immediately rowed across by the Sappers.

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"On the 14th, 15th, and 16th, the Sappers were employed in constructing a breast-work and stockade for the protection of the detachment which the Brigadier-General had ordered to remain for the purpose of forming a depôt for Commissariat stores.

"On the afternoon of the 17th, the Sappers were ordered to proceed with the Right Wing, under the command of Major Wingston, 18th Royal Irish, for the purpose of clearing the road for the advance of the

1853. main column on the following morning. The road was found to be entirely blocked up with felled trees; these however the Sappers, after great exertions, succeeded in clearing away as far as the lake stockade, which was stormed a few minutes before sunset.

"On the 18th the Sappers were again occupied from early in the morning till sunset in cutting a road and removing obstacles, (part of the time at the second stockade being under a heavy fire) to enable the guns to come into action.

"19th. During the whole of this day the Sappers were hard at work as before, and for three-quarters of an hour, under a very heavy fire in front of the third stockade, they were occupied in rendering the road practicable for the advance of the Artillery."

"In forwarding this report for the information of the Brigadier-General Commanding, I have the honour to bring to his notice the unceasing exertions, the coolness under fire, and general good conduct of the detachment under my command, during the protracted operations which resulted in the total defeat of the enemy."

The undermentioned extracts are taken from a letter from Lieut.-Colonel Mullins to the Commandant, Queen's Own Sappers and Miners, dated 25th November 1876, in which further details are given regarding the operations in question.

"When we first reached Donabyo, the Sappers had no means of conveying the troops across the nullahs with which we heard the country between the Irrawaddy and Myatun's stronghold was intersected, and the only appliances to be found were Commissariat casks, which were obtained from Rangoon, and ropes which Commodore Lambert the senior naval officer kindly supplied. Cask rafts, of two barrel piers each, were made up and they answered admirably."

* * * *

"What is mentioned as the third stockade was an extremely strong position. Its length was some 1,200 yards, its left flank was protected by a morass, and along the whole front there was a nullah with a good deal of water and soft mud at the bottom; the ground near the right flank was nearly dry and was covered by an abbatis which was penetrable by individuals with extreme difficulty and some danger even after the capture of the stockade, and was altogether impracticable to troops under fire. The only entrance to the stockade was a narrow path, across which at intervals pits had been dug, and this path was commanded by the two guns captured from the previous expedition, and by several jingals. It was here that Lieutenant Trevor, after several attempts to reach the stockade had failed, was successful in at length leading the way in, and the fact is recorded in Sir John Cheape's despatch."

On the 30th June 1853, a notification was issued by the Governor-General of India in Council to the effect that the army of Ava would no longer be maintained on a war establishment, but that a force would be permanently retained in Pegu for the defence of that annexed province. The notification concluded by directing that a donation of six months' batta should be granted to all the Commissioned, Non-commissioned officers, and men of the several Naval and Military forces that had been employed during the war.

1854. In January 1854, a party of Sappers served with the detachment under Major Allan, who was employed to mark out the northern boundary. This detachment was attacked about 42 miles north of Tonghoo, but repulsed the enemy.

The Honour "Pegu" was granted to the "A" "B" "C" and "E" Companies in G.O.G. No. 33, dated 2nd February 1855.

Equipment.—G.O.G. dated 17-6-1853 authorized the following 1853.
tent equipment for a company of Sappers :—

For the Natives	5	Tents Native	} 2 Tents Lascars.
For 2 Sergeants	1	" "	
For 4 Corporals	1	" "	
Guard and Stores	1	" "	
Total 8 Tents Native, and 2 Tents Lascars.			

Twenty Sappers or 25 Recruits to occupy one Tent Native.
Carriage for Sick— 1 Dooly and 5 bearers for Natives
1 Dooly and 6 bearers for E.N.C.O.s, if 5 in number
1 Cooly for carriage of medicine
Carriage for Tents—In bullock loads 9
Bamboo coolies 6
" " Kits and cooking utensils 2 bullocks.

Under G.O.G. 206, of 27-6-1856, one Tent Native was allowed per detachment of 1 to 3 Companies for sick.

Working Pay.—The working pay was increased under G.G.O. 212 1854.
dated 3-3-1854. "The Honourable the Court of Directors having approved of a proposal for assimilating the scale of working pay of the Europeans attached to the Corps of Sappers and Miners to that authorised in the Royal Sappers, and for establishing a scale on the same principle for the Native ranks, the most Noble the Governor-General in India in Council is pleased to publish the following rules applicable to the three Presidencies, to have effect from 1st January 1854.

The Europeans attached to the Corps of Sappers and Miners will be divided into 3 classes, viz :

1st Class—i. The First Class to be composed of men possessing superior acquirements as artisans or artificers and surveyors, and who must also have passed the examination prescribed by the regulations for Assistant Overseers.

ii. This examination must be of a nature proving that the individual possesses a sufficient knowledge of English writing and accounts to enable him to keep and to prepare the various books and returns required by existing regulations, and such a knowledge of plan drawing as to enable him to frame an estimate, and to lay down a building from a plan, and also such a knowledge of the Native language as may qualify him to converse in it with fluency. When practicable, the examination will be conducted by the Officer Commanding the Sappers and Miners, but in cases where this may be manifestly inconvenient or impossible, it will be made by the immediate Commanding Officer of the candidate, subject to the approval and confirmation of the O.C. the regiment.

iii. The First Class will be open to all qualified men irrespective of regimental rank, and each individual of it will receive 8 annas per diem working pay, when actually employed in surveying, levelling, marking out roads, plan drawing, estimating, working as an artisan, or superintending workshops, or as a teacher in schools, or as an instructor of others in field duties or in trades.

2nd Class—The Second Class to consist of artificers and artisans of inferior skill, and of 1st class labourers ; while actually employed and working as such, men of this class will receive 6 annas per diem.

3rd Class—The Third Class to be formed of 3rd rate artisans, and of 2nd class labourers. The working pay of this class to be 4 annas per diem, when under instruction in surveying, levelling, plan drawing, or estimating, or whilst actually working, or while superintending Native working parties, employed either on field works, or in making roads, or in other civil works.

Rule 2. Men of the 1st and 2nd Classes, when employed on any of the duties of the 3rd Class receive only the working pay of the last named class.

The Native portion of the Corps to be divided into 3 Classes, to be composed indiscriminately of all grades below the rank of Jemadar, as their abilities and acquirements shall render them qualified for each.

1st Class—The First Class to be composed of superior artificers, and to receive 3 annas per diem when employed as artificers at their respective trades, or in making mining frames, or on the superstructure of military bridges, or as Native surveyors, or in marking out roads, or in giving instruction in trades, or in surveying, or in more advanced field works, or in schools.

2nd Class—The Second Class to consist of artificers of inferior skill and 1st class labourers. The working pay to be 2 annas 3 pies per diem when employed at their respective trades, and when giving instruction in ordinary field works, or employed in the more advanced duties of Sappers and Miners, executing the regular sap, tracing batteries, levelling and boring, driving galleries and sinking shafts in mining, or in pontooning.

3rd Class—The Third Class to be formed of 3rd rate artificers, and 2nd class labourers. The working pay to be 1 annas 6 pies per diem whilst under instruction as artisans or surveyors, and attending school for the purpose of learning practical geometry, plan drawing, arithmetic, and mensuration, and when employed in acquiring a knowledge of the more advanced works, or in constructing ordinary field works, viz: trenches, batteries, boring rocks and blasting and in the construction of roads, and other works.

Rule 2.—Men of the 1st Class when employed on duties appertaining to the 2nd and 3rd Classes to receive the working pay of these latter classes only, and in like manner, men of the 2nd Class when employed on the duties of the 3rd Class, to receive only the working pay of this last class.

Rule 3.—Native Commissioned Officers will receive working pay at the following rates for the days on which they may be actually employed :—

Subadar 5 Annas.

Jemadar 4 Annas.

General Rules—

- (i) The classification of the men to rest with the Officer Commanding the Corps, who is also empowered to remove any man from a higher to a lower class as a punishment for continued neglect, and for any period not exceeding 6 months. If he shall desire an extension of this punishment beyond the above period, the case must be reported for the orders of the Commander-in-Chief.
- (ii) Officers commanding companies are authorized to fine men under their command to the extent of one third of the day's rate of working pay, for repeated idleness and inattention, but such forfeiture is to be subject to the confirmation of the Officer Commanding the Corps.
- (iii) The removal of a man from a higher to a lower class, and the consequent lower rate of working pay is invariably to be announced in Regimental Orders, as also his restoration to his original class.
- (iv) No working pay will be granted for less than 2 hours labour; for 2 hours labour, a quarter day's working pay will be granted; from 2 to 4 hours labour, one half day's working pay; for more than 4 up to 8 hours labour, a full day's working pay.

- (v) For labour beyond the period of 8 hours, extra remuneration will be granted as follows:—
 For 2 hours of such additional labour— $\frac{1}{4}$ day's working pay extra.
 For 4 hours—an extra $\frac{1}{2}$ day's working pay.
 For 6 hours—an extra $\frac{3}{4}$ day's working pay.
 For 8 hours—an extra full day's working pay.
- (vi) Men working in reliefs from 2 to 4 hours, in excess of the period of 8 hours, are to receive a half day's working pay extra, and from 4 to 6 hours a whole day's working pay extra, whether the same party comes more than once on this extra duty during the 24 hours or not.
- (vii) Working parties employed in water will be allowed at the rate of a day and a quarter's pay for one day's work.

Increase of Strength.—G.O.G. No. 212 dated 8-9-1854. "Under authority from the Government of India, the Right Honourable the Governor in Council directs the addition of three companies of the establishment strength to the Corps of Sappers and Miners."

This gave 9 companies, beside the dépôt company.

Move of the Head-Quarters of the Corps.—G.O.G. No. 290 dated 8-12-1854. "The Right Honourable the Governor in Council is pleased to direct the removal of the Head-Quarters of the Sappers and Miners from Mercara to Dowlaishweram."

This move was made at the suggestion of Colonel Arthur Cotton, so that the Sappers might be employed on the works in the vicinity of the ancient across the Godaveri, recently constructed by him.

Officers' Mess.—Under G.O.C.C. dated 10-2-1855, it was ordered: 1855.
 "All officers of Engineers will pay donation to the Sappers' Mess, but are exempt from subscriptions except when doing duty with the Regiment, and are to be considered as Honorary Members from the date on which they may quit the Corps. Infantry Officers appointed to do duty with the Sappers will, while at its Head-Quarters and if in charge of companies, pay the same monthly subscription as Engineer Officers of corresponding rank, in addition to that to their own Regimental Messes."

But the words "and if in charge of companies" were erased under G.O.C.C. 68 of 18-9-1856.

Promotion.—Under G.O.G.G. dated 21-9-1855, Service as Commandant of the Sappers and Miners, in the rank of Lieut.-Colonel, counted towards the 3 years' service as a Regimental Lieut.-Colonel required to become entitled to the rank of Colonel.

Regimental Staff.—Under G.O.G. dated 14-12-1855, the appointments of Adjutant and Quarter-Master were separated, and staff salaries were allowed for these two officers at the same rates as authorized in the Bengal Corps of Sappers and Miners.

	Staff Pay.	Horse Allce.	Office Allce.	Total.
Adjutant	92-7-0	30	90	212-7-0
Quarter-Master	62-0-0	30	45	137-0-0

War in Persia 1857.—The "B" Company embarked at Coconada on the 19th January 1857 to join the expedition to Persia, and arrived at Bushire in March. It proceeded on board the Indian Navy S.S. *Victoria* with the second division of the Persian field force up the Shat-ul-Arab river to within three miles of the southern battery of Mohumera. During the night of the 24th Major Boileau and other staff officers reconnoitred the enemy's position, especially with a view to ascertain whether it were possible to establish batteries on the island of Dubbi, west of the northern battery.

1855.

On the evening of the 25th the "B" Company was transferred to the Bengal Marine S.S. *Hugh Lindsay*. At daybreak on the 26th the Indian naval squadron ran up the river until opposite the forts defending the channel leading up to Mohumera, and engaged the batteries. The carronades of the *Hugh Lindsay* were worked by H.M.'s 64th Regiment, assisted by the Sappers. By 11 a.m. the enemy's batteries were silenced, and the disembarkation of the troops was effected by 1-30 p.m.

The division advanced through date groves intersected by irrigation canals, many of which were bridged by date trees felled by the Sappers. The bridge by which the Artillery and Cavalry crossed the main irrigation channels consisted of trees felled on both sides of the channel, with a large Arab boat as a central support.

The Persians retired precipitately, leaving their tents, baggage, guns, and stores, with a loss of about 200 killed.

The work of the Madras Sappers at Mohumera was extremely heavy. Batteries were destroyed, roads made, landing stages constructed, streams dammed or turned, and model huts erected.

The following is a copy of the letter addressed to the Adjutant-General of the Madras Army by the Chief of the Staff of the expeditionary force on the return of the company to Bombay:—

Camp Mohumera, 13th May 1857.—"SIR,—In reporting to you the departure this day in the transport *Hibernia* bound for Bombay, of the "B" Company, Sappers and Miners, I am instructed by Lieutenant-General Sir James Outram to state that the conduct of the men has been exemplary since they joined this force, and that they have rendered the most efficient service on the expedition against Mohumera, and during its occupation.

"2. The peculiar features of the country afforded them ample employment, and the skill and wonderful rapidity and cheerful alacrity with which they constructed roads through the extensive date groves, bridged the canals, and formed piers for disembarking troops and stores from the vessels on the Shat-ul-Arab river, were the admiration of the whole army.

"3. I am commanded to request you will be so good as to lay before His Excellency Sir Patrick Grant this record of Sir James Outram's appreciation of the services performed by the Sappers, and that you will permit me to convey through you to the officer commanding (Brevet Major Boileau) and to all ranks composing the company an expression of the Lieutenant-General's very best thanks for the very efficient service they have rendered.

EDWARD LUGARD, Brig.-Genl.,

Chief of the Staff, Expeditionary Force."

The services of Major Boileau and of the "B" Company were also brought to the notice of the Governor-General by Sir James Outram in a Despatch dated at Bombay on the 5th July, from which the following is an extract:—

"His and their services were most conspicuous in the zeal and activity they displayed in filling ditches, preparing bridges, &c., to facilitate the landing and advance of the troops at Mohumera, and the subsequent incessant labours they were exposed to during our occupation of Mohumera, and I consider that they deserve special notice and warm commendation for the alacrity with which they volunteered for foreign service, though they had only very lately rejoined their families after separation of nearly five years of successive absences on field service. Although sent back to India, this devoted body of soldiers, instead of being allowed to rejoin their families in the Madras Presidency, has I understand, been attached to the column under

General Woodburn intended for the relief of Mhow, with which they 1855.
are now employed, having displayed, I am told, the utmost cheerfulness
and alacrity when ordered* on the duty."

The officers employed with the company of Sappers and Miners in Persia were—

Captain and Brevet Major A. M. Boileau, M.E., Commanding.

Lieutenant P. A. Brown, 1st E.R.

" F. R. Fox, 14th Regiment M.N.I.

Second-Lieutenant H. N. D. Prendergast, M.E.

H. J. Gordon, M.E.

Subadar Silavay.

Jemadar Ali Khan.

Assistant Surgeon T. Lowe.

The Honour "PERSIA" was granted to the company under G.O.G. 205 of 18-6-1861.

Suppression of the Mutiny, 1857-58.—Mhow, Malwa, and 1857.
Central India Field Forces.—"B" Company landed at Bombay on 1st June 1857, on its return from Persia, and on the 8th idem volunteered for Field Service, for which it received the thanks of the Bombay Government on 10th, "For the readiness with which they have volunteered their services."

On the 16th June it proceeded to Aurungabad, and joined the Deccan field force under Major-General Woodburn, C.B., on the 7th July. On the 12th the force marched from Aurungabad, and relieved Asirghar on the 25th idem and Mhow on the 2nd August, the Sappers having had frequent employment on the way as Pioneers, in making roads passable, and in ramping banks of rivers and streams. During the rains the Sappers were employed in strengthening the defences at Mhow. On the 20th October the left half company marched under command of Lieutenant Fox, 14th Regiment M.N.I., towards Dhar with Major Keane's column, and took part as skirmishers in the successful affair near that place on the 22nd October. Lieut. Prendergast acted as Brigade Major to the force.

On the 24th idem the right half company reached the camp of the Malwa field force before Dhar, having escorted the siege guns from Mhow.

By the 25th, No. 1 Mortar Battery was completed and armed. On the 26th, the ridge 200 yards west of Dhar was occupied. Batteries No. 2 for field guns and No. 3 for breaching guns and mortars were armed and in action early on the 27th, but constant work at them was required till the end of the siege, the Sappers frequently revetting and improving the embrasures in broad daylight, and always working 15 hours out of the 24. On the night of the 28th, Battery No. 4 was erected, and the screened approach to it was made the following morning. Fire was kept up almost unremittingly, till on the evening of the 31st the breach was reported practicable, and orders were given for storming the fort before daybreak on the 1st November, but the enemy evacuated the place during the night, and it was occupied without further opposition. Major Boileau, Field Engineer, brought the services of the Sappers to the notice of General Stuart in the following words:—

"3. I would first allude to my two assistants, Lieutenants Prendergast and Gordon, whose energy and activity were most untiring. Their coolness under fire was very conspicuous.

"4. The Brigadier Commanding has been pleased to notice favourably the exertions of the officers and men of the Madras Sappers and Miners. Their duties were truly arduous, and right well were they carried out.

* The "B" Company volunteered for this service.

"6. There are two individuals whom I wish to bring to the special notice of the Brigadier Commanding, viz., Corporals Hoskins and Clarke of the Madras Sappers and Miners. These men volunteered for the dangerous service of inspecting the breach in broad moonlight, at a time when there was reason to suppose they would be fired on at every step, and almost certainly shot on the breach. The duty was a necessary one, and was most cheerfully and unhesitatingly performed."

The following is an extract from the report of Brigadier-General Stuart to the Adjutant-General of the Bombay Army, dated at Dhar, 4th November, and which was published in the *Fort Saint George Gazette* of the 15th December 1857:—

"I beg, in conclusion, to bring most prominently to the notice of His Excellency the Commander-in-Chief the great assistance I have received from Major Boileau and the officers and men of the Madras Engineers and Sappers and Miners, throughout the late operations; the conduct of Corporals Hoskins and Clarke of the latter Corps has, His Excellency will observe, been especially marked for gallantry, and I earnestly trust that both these deserving men may be rewarded."

On the 8th November the company marched from Dhar with the rest of the force, and encamped near Mandisur on the 21st idem. Major Robertson 25th Regiment Bombay Native Infantry, commanded the outposts. About midday his piquets were driven in by a determined advance of the enemy's infantry, which however was checked by a charge of Cavalry till the main body of the field force, hitherto concealed from the enemy by the rising ground occupied by the outposts, had formed for action. The villages in which the outposts had been placed were speedily prepared for defence by the Sappers, who afterwards aided in maintaining them, and also in the defeat of the enemy on the subsequent advance of the field force. Second-Lieutenant Prendergast was severely wounded on that day. On the 23rd the force came upon the Shahzada's army in the strong position of Gurariah, five miles north-west of Mandisur. The Brigadier at once prepared to attack, and charged the batteries in the centre of the position. The Sappers were in echelon on the left of the 25th Regiment in the advance.

During the action, a strong body of rebels marched from Mandisur with the intention of attacking in reverse the right of the British line, which was already outflanked by the preponderating strength of the force from Nimach. The attempt however was frustrated by prompt action on the part of the rear guard, consisting of detachments of the 14th Light Dragoons, 1st and 4th Cavalry Hyderabad Contingent, Madras Sappers and Miners in charge of an 8-inch howitzer, and the 25th N.I.

Havildars Appu* and Gurusami of the Sappers were distinguished for their readiness in loading and firing the howitzer at a critical moment of the action.

On the 24th of the same month the village of Gurariah was stormed and carried. The Sappers accompanied the storming parties, and were specially useful in knocking down walls and making approaches by which troops could advance upon the enemy under cover. Naick Vellient† distinguished himself by his cool courage.

The following is a copy of Brigadier-General Stuart's acknowledgment of the services of the Sappers on this occasion, which was addressed to the Adjutant-General of the Bombay Army, and afterwards published in the *Fort Saint George Gazette* of the 23rd January 1858:—

* Afterwards Subadar "Bahadur."

† Afterwards Subadar-Major "Sirdar Bahadur." "

"To Major Boileau, Field Engineer, and his assistants, Lieutenants Prendergast (severely wounded) and Gordon, my warmest thanks are due; the assistance rendered me by these officers left me nothing to wish for. 1857.

"Of the conduct of Captain Brown and the officers and men of the "B" Company, Madras Sappers and Miners, I have much pleasure in speaking in the highest terms. Whether as Sappers or as Infantry, they have distinguished themselves on every occasion. They have undergone an incredible amount of hard labour during our late march, with a siege train over a country without roads, nor must I omit to mention that they accompanied the storming parties into the village of Gurariah, and proved of the greatest service.

"I must now, in conclusion, place on record my grateful acknowledgments to Major Boileau and his assistants."

From Mandisur the "B" Company marched through Mahidpur to Indore, and thence on the 8th January 1858 with the 2nd Brigade of Sir Hugh Rose's Central India field force, through Sehore and Bhopal, towards Saugor. 1858.

On the 24th January the brigade encamped before Ratghar after driving the enemy into the fort. On the 26th the pettah north of the fort was taken, and from this the right attack was commenced.

On this day whilst the company was throwing up a battery, Captain Brown told the Subadar that General Rose and the Chief Engineer Major Boileau wished to know if there was a ditch in front of a certain wall that they intended to breach, and he called for volunteers to ascertain the fact. Subadar Silavay at once volunteered, and with him Jemadar Appavu, and Privates Chinnatambi, Appasami, and Savathiyen advanced under a heavy fire, jumped into the ditch, took the requisite measurements, and returned safely with the report.

The Sappers were employed in making the road to the left attack on the eastern face of the fort, and in making such protective works as were possible for men and guns, by cutting brushwood for screens, and building stone breast-works. A sand-bag battery for two 18-pounders and one 8-inch howitzer was completed by daylight on the 27th, and on the evening of the 28th the breach was reported practicable by Subadar Silavay, Privates Pichamuttu and Chinnatambi, and Corporal Linahan, all of the Sappers, who had been sent to inspect it.

On 30th, Major Boileau wishing to know the progress made in breaching the wall, Captain Brown called for volunteers to accompany Corporal Linahan for this purpose. Lance-Naick Pichamuttu and Private Savathiyen at once volunteered, they proceeded to the breach under covering fire, and were able to ascertain all that was required; the enemy evacuated the fort that night, and the following day the Sappers were busy mining and demolishing it. Four N.C.O.s and men of the Corps were wounded at Ratghar.

In his despatch dated 7-2-1858, Major-General Rose reports—"I beg to bring to His Excellency's favourable consideration the zealous and able support which I received before Ratghar from * * * and Major Boileau Commanding the Engineers."

On the 3rd February the Brigade relieved Saugor, on the 8th half the company marched to Nauriauli, distant 14 miles, and returned the same day, having mined and blown up the towers flanking the gate. On the 9th the Sappers destroyed the fort at Sanoda, and on the 10th took part in the affair at Bussari, close to Garakotta. Batteries were commenced against Garakotta on the 11th, but the enemy abandoned the fort on that night. One of the fronts was then mined and destroyed so as to leave a practicable breach, and the force resumed

1858. the march towards Jhansi. On the 1st March the small fort of Barodia was taken. On the 2nd, half the company occupied and strengthened the fort. On the 3rd, the remainder of the men were employed in forcing the pass of Mudnapore. On the 11th, a party was engaged in blowing up the castle of Bawanpore, and on the 14th and 15th the company completed a survey of the Fort of Tal Behut which had been evacuated a few days before.

On the 20th a strong detachment from the 2nd Brigade advanced by a forced march of about 25 miles, and placed piquets on all the chief roads round Jhansi. On the 21st, reconnaissances were made by the General accompanied by Lieutenant Prendergast and by Major Boileau, and the Head-Quarters marched to the neighbourhood. The following extracts are taken from the report of Sir Hugh Rose, dated 30th April, in which the operation of his force against the fortress and the fortified city are detailed :—

“The great strength of the fort, natural as well as artificial, and its extent, entitles it to a place amongst fortresses. It stands on an elevated rock rising out of a plain, and commands the city and surrounding country; it is built of excellent and most massive masonry. The fort is difficult to breach because composed of granite; its walls vary in thickness from sixteen to twenty feet.

“The fort has extensive and elaborate outworks of the same solid construction, with front and flanking embrasures for artillery fire, and loop-holes, of which in some places there were five tiers, for musketry; guns placed on the high towers of the fort commanded the country all around. One tower, called the “white turret,” had been raised lately in height by the rebels and armed with heavy ordnance.

“The fortress is surrounded by the city of Jhansi on all sides except the west and part of the south face. The steepness of the rock protects the west. The fortified city wall, with bastions springing from the centre of its south face, running south and ending in a high mound or mamelon, protects by a flanking fire its south face. The mound was fortified by a strong circular bastion for five guns, round part of which was drawn a ditch 12 feet deep and 15 feet broad, of solid masonry.

* * *

“The Chief of the rebel Artillery was a first-rate Artilleryman; he had under him two companies of Golandaz. The manner in which the rebels served their guns, repaired their defences, and reopened fire from batteries and guns repeatedly shut up, was remarkable. From some batteries they returned shot for shot. The women were seen working in the batteries, and carrying ammunition.”

During the general action on 1st April with the army brought to relieve Jhansi by Tantia Topi, Second-Lieutenant Prendergast, acting as A.D.C. to the General, charged with a troop of the 14th Light Dragoons the enemy's infantry and artillery posted behind works. This charge was equal to breaking a square, but was most successful, and decided in a great measure the fate of the day. Both Lieutenants Prendergast and Fox were specially mentioned in G.O.C.C. 622 of 1859 for their conduct during this action, the former for having distinguished himself on various occasions under the general's eye, “by his merit and gallantry as devoted as they were unostentatious,” and particularly in the charge made by Captain Need's troop H.M. 14th Light Dragoons, when acting A.D.C. to Sir Hugh Rose; the latter for having killed 8 men with his own hand.

On the 2nd April Major Boileau reported that the necessary preparations for the escalade were completed, and the place was attacked on the 3rd and carried after an obstinate resistance.

About 3 a.m. the storming parties advanced. With the right

attack, the escalading party was formed of Madras and Bombay Sappers, 3rd Europeans, and Hyderabad Infantry. The moon was very bright, and the escalading party had to march 200 yards through a heavy fire, the Sappers planted the ladders in 3 places, three of the ladders broke, and three officers of the Bombay Engineers who led the way were killed or wounded, Lieut. Fox of the Madras Sappers was shot through the neck, but the British pushed on and gained a footing from 8 ladders. Although an entrance had been gained, street fighting went on for 4 days before we had obtained complete possession of the city. During this street fighting the Sappers, on the arched roof of a strong building still held by the rebels, jumped holes through the roof to drop live shells into the building, and a Havildar of "B" Company was killed during this proceeding by a shot fired up through the hole just jumped in the roof.

Sir Hugh Rose, at the conclusion of his report, brought the conduct of the troops to the favourable notice of the Commander-in-Chief in the following words:—

"They had to contend against an enemy more than double their numbers, behind fortifications, who defended themselves afterwards from house to house in a spacious city, often under the fire of the Fort, afterwards in suburbs and very difficult ground outside the walls."

* * * * *

"The nature of the defence and the strictness of the investment gave rise to continued and fierce combats; for the rebels having no hope, sought to sell their lives as dearly as they could. But the discipline and gallant spirit of the troops enabled them to overcome difficulties and opposition of every sort, to take the fortified city of Jhansi by storm, subduing the strongest fortress in Central India, and killing 5,000 of its rebel garrison."

* * * * *

"I beg leave to state the obligations I am under to the following officers for the services which they have rendered to me during the siege operations and capture of Jhansi:—

"Captain Brown, Commanding Company Madras Sappers and Miners.

"Major Boileau, Commanding Engineer.

"I have much satisfaction in bringing to the notice of His Excellency, the officers mentioned in the Brigade Despatches.

* * * * *

"Lieutenant Fox, Madras Sappers and Miners."

In the capture of Jhansi, "B" Company suffered the following losses: two Privates killed, and two mortally wounded, Lieut. F. R. Fox very dangerously wounded, one N. Officer and seven N.C.O's. and men wounded.

On 25th April the company marched from Jhansi with the 1st brigade, and was next engaged in the action before Koonch on the 7th May; on the 9th Hurdooi was reached and the Sappers remained there two days to destroy the fort, moving on the 11th they found on arrival at Oorai that the force had marched towards Kalpi, and continuing their march they reached the 1st brigade at 2 p.m. having covered 20 miles, and were present at the action of Sirsi on 12th May 1858.

On the 15th the force encamped at Golowli, about six miles from Kalpi. From the 15th to the 23rd May inclusive there was constant fighting between Golowli and Kalpi. Sir Hugh Rose described the tactics of the enemy in unceasingly harassing his troops and forcing them into the sun, large bodies of cavalry hanging on his position, retiring when attacked, but ready to fall on escorts sent to a distance for forage, the want of which was the cause of serious losses. The

1858. thermometer stood at 118 degrees in the shade ; a great proportion of officers and men were ill ; the force for months had been making the strongest physical exertions with broken sleep, or no sleep at all, watching the camp half the night, and marching the other half to avoid the sun, then often all day without rest, fighting, or on the rear guard, or on reconnaissance or escort under a burning sun. The Sappers were constantly employed in making roads passable throughout the march, and occasionally in hauling heavy guns through difficulties.

After fighting on the morning of the 23rd, Kalpi was entered without resistance.

On the 6th June the company marched towards Gwalior with a detachment under Sir Hugh Rose, composed of one battery of Artillery, and two squadrons of Cavalry. The thermometer in the shade stood at 130 degrees. On the 16th the Sappers, then reduced to 45 of all ranks, took part in the action at Morar. They were commanded by Lieut. Gordon, who was mentioned in Brigadier-General Napier's Despatch as having kept pace with the 71st Regiment and joined in the attack on the ravines.

Three sections of the company were advancing in line with four companies of H.M. 71st Regiment when they came suddenly on a nullah in which a number of the enemy were concealed, a hard fight ensued during which Naick Narayanasami saw three of the enemy attacking a man of the 71st ; he fired and wounded one of them, and then killed him with the bayonet, on which the other two cleared off ; for this act he was admitted to the 3rd Class of the Order of Merit. To facilitate the attack on Gwalior, the company was employed on bridging the canal, but receiving intelligence that the enemy were going to attack him, Sir Hugh Rose decided not to wait until the evening when the bridge would have been ready, but to take the offensive at once, and Gwalior was assaulted and captured on 19th June.

Sir Hugh Rose in his G.O.C.C. of 13-11-1858 mentioned the Sappers as follows :—

“The company of Madras Sappers and Miners, whose zeal and intelligence no hardships can abate, would have completed the bridge by sunset, and I anticipated the best results from availing myself of it for the purpose of cutting off during the night the enemy's numerous force of all arms on the hills.”

The detachment left Gwalior a few days afterwards, and with the exception of an affair on the banks of the Jumna, where a party of the enemy was routed, it had no further opportunity of distinguishing itself during the Central India Campaign.

This company took the field with six European Officers, two Native Officers, four Havildars, eight Naicks, 105 Privates, and three Artificers ; it returned to Head-Quarters 41 strong of all ranks, commanded by the Junior Subaltern, all his seniors having been sent away sick or wounded.

The following officers served with the company :—

Major A. J. M. Boileau, M.E., Commanding to July 1857,
(wounded) awarded Brevet Lieut.-Colonel and Colonel.

Captain P. A. Brown, 1st E.R. Commanding July 1857 to May 1858,
(invalided), awarded Brevet Major.

Lieut. F. R. Fox, 14th M.I. (dangerously wounded).

Lieut. H. N. D. Prendergast, M.E. (twice severely wounded, and horse killed). Awarded Brevet Major, on his promotion to Captain, and V.C.

1858.

Lieut H. J. Gordon, M.E. Commanding after May 1858.

Asst. Surgeon T. Lowe, awarded Brevet Surgeon.

Subadar Silavay, promoted to the 2nd Class of the Order of British India.

Jemadar Ali Khan, promoted to the 1st Class of the Order of British India.

The following Native Officers, N.C.O.'s. and men were admitted to the 3rd Class of the Order of Merit for conspicuous gallantry :—

Subadar Silavay, at Ratghar, on 26th January 1858.

Jemadar Appavu at Ratghar on 26th January 1858.

Private Chinnatambi, at Ratghar, on 26th January 1858.

Private Appasami at Ratghar on 26th January 1858.

Private Savathian at Ratghar, on 26th and 28th January 1858.

Private Pichamuttu at Ratghar, on 28th January 1858.

Naick Narayanasami in the action at Morar on 16th June 1858.

The Corps was granted the Honour "CENTRAL INDIA," under despatch No. 406 of 30th November 1863 from the Secretary of State for India.

The following is a copy of the recommendation of Lieutenant Prendergast for the Victoria Cross, which was conferred on him by Her Majesty in October 1859 :—

Regiment.	Rank and Name.	Acts of bravery for which recommended.
Madras Engineers	Lieutenant Harry North Dalrymple Prendergast.	For conspicuous bravery on the 21st November 1857 at Mandisur in saving the life of Lieutenant G. Dew, 11th Light Dragoons, at the risk of his own, by attempting to cut down a Valaitee who covered him, Lieutenant Dew, with his piece from only a few paces to the rear. Lieutenant Prendergast was wounded in this affair by the discharge of the piece, and would have probably been cut down had not the rebel been killed by Major Orr.

He also distinguished himself by his gallantry in the actions at Ratghar and the Betwa when he was severely wounded.

Major-General Sir Hugh Rose in forwarding his recommendation of this officer, states :— Lieutenant Prendergast, Madras Engineers, was specially mentioned by Brigadier, now Sir Charles Stuart, for the gallant act at Mandisur, when he was severely wounded; secondly, he was specially mentioned by me when acting voluntarily as my Aide-de-Camp in the action before besieging Ratghar on the Bina river for gallant conduct, his horse was killed on that occasion; thirdly, at the action of the "Betwa" he again voluntarily acted as my Aide-de-Camp and distinguished himself by his bravery in the charge which I made with Captain Need's troop, Her Majesty's 14th Light Dragoons, against the left of the so-called Peishwa's Army under Tantia Topce. He was severely wounded on the occasion.

The account of the "B" Company during the Mutiny may be fitly concluded by the following extract from the *London Gazette* of the 8th November 1859, which was republished in the *Fort St. George Gazette*, G.O.G. 29 of 6th June 1860 :—

London Gazette, November 8th 1859.

INDIA OFFICE, November 4th 1859.

The following papers have been received by the Secretary of State for India in Council :—

No. 1.

Extract of a letter from Major-General Sir HUGH ROSE, G.C.B., dated 14th May 1859.

Para. 16. I have already praised the excellent conduct of the "B" Company, Madras Sappers and Miners, which formed part of my Force; but I now beg leave to request, most respectfully, His Lordship the Commander-in-Chief in India, to have the goodness to convey to His Excellency the Commander-in-Chief of the Madras Army, the high sense which I entertained of the excellent service which they performed under my orders. They lived on the very best terms with their English comrades; no work was too dangerous, or too difficult for the

1858. gallantry and devotion of this company which has been twenty months on Foreign Service. On account of the great length of hard service which the company had gone through it was to return to Madras from Kalpi, but on Gwalior falling into the hands of the rebels the company again took the field with the utmost alacrity, and again earned, not only my sincere approbation, but that also of the Central India Field Force, by its unvarying gallantry and zeal. Captain Brown deserves to be specially mentioned for having led this distinguished company at the escalade of Jhansi, and for having commanded it from the 5th July 1857, when its commander, Lieut.-Colonel Boileau was appointed to the Staff, till the close of the operations against Jhansi, when he fell sick. Lieutenant Gordon then took the command of the company, and I beg to mention him specially for the satisfactory manner in which he performed this duty. The Subadar* of the company has a full right to be specially mentioned for his admirable conduct throughout the campaign.

The following is an extract from G.O.C.C. No. 143 issued by Lord Clyde on 12th December 1859 :—

“The “B” Company were distinguished during the advance of the Central India Field Force under Major-General Sir Hugh Rose, and have since been usefully employed at Jhansi, and in the neighbourhood of that place.”

In accordance with the recommendation of the C-in-C., Lieut. H. N. D. Prendergast was allowed to count as service for retiring pension 15 months' sick leave which was necessary for the recovery of his health, and Lieut. F. R. Fox was similarly allowed to count 18 months.

1857. **Operations in Oude.**—“C” Company moved from Dowlaishwaram, and embarked at Coconada in August 1857 for Calcutta, the officers with it being Lieut. F. M. Raynsford, 14th M.I., and Ensign D. S. Ogilvie, 20th M.N.I., whilst Second-Lieut. W. H. Burton, M.E., joined the company in Calcutta; in September the company joined the moveable column marching on Lucknow. On reaching Allahabad in October the column was broken up, and “C” Company were sent to Cawnpore; Lieut. C. Scott, M.E., joined the company at Allahabad and took command; after a week in Cawnpore they marched with the 23rd Company, R.E., to Bani bridge, 18 miles south of Lucknow, and after 3 or 4 days' work repairing that bridge, joined the force for the 2nd Relief of Lucknow at Buntera near the Alambagh. On 14th November an advance was made towards Dilkusha and the Martiniere, the company being pushed to the front to make holes through the Dilkusha park wall. Lieuts. Burton, M.E., and Lang B.E., were the two first on the top of the Martiniere, and planted our flag on it. They were actively employed during the attack and subsequent withdrawal from the Residency on the night of the 22nd, to the Alambagh. From there they were sent to Bani to form the village into a defensive post so as to cover the bridge, but after two weeks' work rejoined the force at the Alambagh under Sir James Outram, where they were the only Sappers. Lieut. Ogilvie and 40 men took part in the action at Guili on 22nd December, when the enemy's four guns were captured, and the Sappers had to be utilised to extricate them from a ravine into which they had been driven.

In his report dated Lucknow, 18th November 1857, the Commander-in-Chief in India, Sir Colin Campbell, said :—“I have further to bring to your Lordship's notice Lieut. Scott, Madras Engineers, who commanded the Sappers and Miners.” Lieut. Scott was also thanked

* Subadar Silavay.

by the Governor-General in Council, under G.O.G.G. 1546 dated 10th December 1857.

The company remained at the Alambagh from November to March, and was then attached to an Engineer Brigade formed under the command of Colonel R. Napier, and was present during the operations before Lucknow, from 2nd to 21st March, which terminated in the capture of the city. 1858.

During the remainder of the year it was actively employed in Oude, and was present at the affair of Barri on the 13th April, and that at Sirsi on the 12th May, the action at Nawabgunge on the 13th June, the occupation of Fyzabad on the 29th July, the actions at Sultanpur on the 13th and 28th August, the affair at Shahpur on the 13th October, the action at Daoudpur on the 20th idem, the capture of the forts at Rehora and Kooili on the 23rd November, and the action at Doundiakaira on 24th November.

From the 6th December 1858 to the 17th January 1859, it was employed beyond the Gogra on the Rohilkand frontier and returned to Madras in February 1859.

The services of the company and of the officers doing duty with it, were acknowledged in the orders from which the following extracts are taken:—

Extract from Despatch dated 30th August 1858 by Major-General Sir J. Hope Grant, Commanding Oude Force

"I have great satisfaction in bringing to the notice of H.E. the C-in-C. the zeal and unceasing exertions of Lieut. Scott, Field Engineer, and Lieut. Raynsford Commanding the Madras Sappers, in preparing the rafts and crossing over the troops. Everything had to be made upon the spot, and the material collected from houses in the town. These two officers and the detachment of Madras Sappers (who worked as I never saw Native Soldiers work before) were employed day and night, with very few hours interval during the operation."

Despatch from the Right Honourable the Secretary of State for India, dated 28th November 1858, No. 28.

* * * *

The thanks of Major-General Sir James Outram to appear to have been fully merited by their gallant and soldier-like conduct. * *

His testimony to the conduct and services of the "C" Company of Madras Sappers and Miners under Lieutenant C. Scott is highly honourable to them. "Their skill as workmen, their industry, their cheerful alacrity, and general good conduct, commanded the respect of all who saw them at Alambagh; and their coolness and bravery when called upon, as they were on every occasion of attack on our position, to act as soldiers, was conspicuous." This testimony to the value of the Corps supports the opinion the late Court of Directors have expressed in favour of increased enlistment of men of the classes* of which that Corps is chiefly composed."

Extract from an Order of the Governor-General in Council, dated at Allahabad, 5th April 1858.

* * * *

Roll of Officers who have served under Brigadier† R. Napier, Commanding Engineer Brigade during the operations at Lucknow in March 1858, and who are deemed deserving of honourable mention:—

* Appendix H. † Lord Napier of Magdala.

1858.

Corps or Detachment.	Rank and Names.	Remarks.
* Madras Engineers ...	* * Lieutenant Scott	* * * ... Actively engaged on all attacks on the Begam's Palace and Kaiser Bagh.
Madras Native Infantry with Madras Sappers	Ensign Ogilvie	... Engaged in attack on the Imambara and Kaiser Bagh. In the taking of the latter he accompanied the most advanced party of Her Majesty's 10th Foot under Captain Norman, assisted in the defence of their post, and went through a heavy fire to bring up reinforcements, which he did, remaining with them until severely wounded. Captain Norman publicly thanks Ensign Ogilvie for his services.

R. NAPIER, Brigadier,
Chief Engineer.

Roll of Officers and men who have served under Brigadier-General Sir E. Lugard, K.C.B., Commanding 2nd Infantry Division during the operations at Lucknow in March 1858, and who are deemed deserving of honourable mention.

Head-Quarters, 2nd Division, 25th March 1858.

Officer of Sappers honourably mentioned during siege of Lucknow.	Corps or Detachment.	Rank and Names.	Remarks.
	Madras Sappers	Lieutenant Scott ...	Accompanied the advance party on the 11th with powder bags and ladders.

EDWARD LUGARD, Brigadier-Genl.,
Commanding 2nd Infantry Division.

This Officer was killed on the 23rd November when reconnoitring the gate of the fort at Kooili.

The following is an extract of Colonel Galway's report :—

"It grieves me deeply to have to report the loss on our part of Captain Scott, who was shot whilst endeavouring more nearly to reconnoitre the gate. I need not dilate on his value, as it was well known, but must express my sorrow at being unable to return him my thanks for his zealous and active services during the day."

Captain Scott was again honourably mentioned both by the Governor-General and the Commander-in-Chief in the letter and order given below :—

From the Adjutant-General of the Army, Allahabad, 21st December 1858.

To

The Secretary to the Government of India.

"Sir,

* * * * * I am to express Lord Clyde's regret that Captain Scott, of the Madras Engineers, who had already achieved a good reputation as an officer, should have fallen in these operations."

General Order by the Right Honourable the Governor-General, 1858.
Allahabad, 30th December 1858.

* * * *

"While the conduct of the officers and men engaged in these operations has given the Governor-General the highest satisfaction, His Lordship regrets that it has been accompanied by the loss of Captain C. Scott, Madras Engineers, who had earned the approval of the Government by a zealous and efficient discharge of his duty."

On the 28th November 1859, Lord Clyde on the approaching return of the Madras and Bombay troops to their respective Presidencies, recognized their important services in General Order 143, of which the following portion relates to this company:—

* * * *

"The "C" Company, Madras Sappers and Miners, were engaged and distinguished at the relief of Lucknow; the Sapper Company subsequently remaining with General Sir James Outram's Force at Alambagh, taking a part in the siege and capture of Lucknow, and being afterwards constantly employed in Oude under Sir Hope Grant through the year 1858."

The following officers served with the company:—

Lieut. C. Scott, M.E., Commanding, (killed at Koili)

Lieut. F. M. Raynsford, 14th N.I.

Lieut. H. St. M. Wynch, 31st N.I.

Lieut. W. Rawlins, 7th N.I.

2nd-Lieut. W. Burton, M.E.

Ensign D. S. Ogilvie, 20th N.I. (wounded).

The following were admitted to the 3rd Class of the Order of Merit, in consideration of the conspicuous gallantry displayed by them at Lucknow on the dates mentioned:—

Havildar Tiruvengadam, 17th November 1857.

In the attack on a building called D bungalow, the advance was exposed to a heavy flank fire, the Havildar took three of his men to throw up some cover, and whilst placing a plank to revet the earth was shot through the arm.

Private Bagavathi, 11th March 1858.

" Perumalu, 11th March 1858.

These two, carrying powder and sand bags, were with Captain Scott in advance of the assaulting column at the storm of the Begam Koti, they laid the charge, and the gate was blown in under a heavy fire.

Private Chinnien, 14th March 1858, when he carried a powder bag at the storm of the Kaisar Bagh, and breached the wall.

The Honour "Lucknow" was granted to the Corps under Despatch No. 406 of 30th November 1863, from the Secretary of State for India.

Operations in the Nagpur, Saugor, and Narbada Territories.—Under G.O.C.C. 69 dated 16th November 1857, a 1857.
Division was formed for Service in the Nagpur, Saugor, and Narbada Territories, to be composed as follows:—

Brigadier G. C. Whitlock, to be a Brigadier-General, and to Command.

* * * *

The detachment "A" and "E" Companies, Sappers, now with the Karnul Moveable Column.

All appointments in this Division to have effect from this date.

1858.

Operations in Bundelkhand and Saugor.—"L" Company served with the column under Major-General Whitlock, which assembled at Jubbulpore in March 1858, and was present at the surprise and destruction of Jhigang on the 9th April 1858, the affair at Kubrai 17th idem, the battle of Banda 19th idem, the surrender of Kirwi on the 25th December after a march of 70 miles in 36 hours, and the action at Punwarri on the 29th idem (one N.C.O. wounded), where Rajah Govind, the leader of the enemy, was killed.

The services of this company were mentioned by Lord Clyde in his Order of the 28th November 1859, in the following words:—

"Lord Clyde cannot permit the Madras and Bombay troops to quit Bengal, without expressing his thanks for the useful service they have rendered during the past two years.

"L" Company Sappers and Miners, under Major-General Sir G. C. Whitlock, partook of the various operations under the direction of that officer, and have since been employed in the reduction and occupation of Bundelkhand and Saugor.

* * * * *

The whole of these troops now leaving Bengal (whether of Madras or of Bombay) have gained additional credit for the Armies to which they belong, and Lord Clyde congratulates them on being about to return to their own Presidencies after a career of honourable service elsewhere."

The officers serving with the company, were:—

Lieut. D. S. P. Campbell, 7th M.N.I., Lieut. J. J. Eager, 52nd M.N.I.

1857.

Sapper Allowance.—G.O.G. No. 5 dated 6th January 1857. The terms "Palankeen allowance" and "Book and Instrument allowance" as applied to the allowances aggregating sixty rupees per mensem, which are now drawn by Engineer Subalterns doing regimental duty with the Sappers and Miners are to be abolished, and in lieu of those discriminated allowances, a consolidated allowance of sixty rupees a month under the name of "Sapper allowance" will be granted to all Engineer Subalterns doing duty with the Sappers, whether as attached to companies, or holding office on the regimental staff.

Madras Sapper Militia.—A battalion of eight companies with a total strength of 3 British officers, 17 Native officers, 2 B.N.C.O.s and 1,092 Native N.C.O.s and men, was raised under G.O.G. 223 dated 21st July 1857. Service in this battalion was under the same conditions as for Native Infantry, including pensions after 20 years' service, and its first duty was to provide guards and escorts at and near Madras, but when not required for any other duty, the battalion was to be available for employment as Pioneers, and when so employed the men were to receive working pay at the rates allowed to the Sappers and Miners. Men of all castes were eligible for enlistment, but "especially such as are likely to form good Sappers."

This battalion was disbanded from 10th June 1860, (G.O.C.C. 70 of 31st May 1860), 86 men being transferred to the Madras Sappers and Miners, 141 men being transferred to the 1st Pegu Sapper Battalion, (broken up from 31st April 1863 under G.O.C.C. of 25th April 1863), into which the Pegu Police Battalion raised in 1858 was converted under G.O.G. 256 of 1st June 1860, and the remainder being transferred to infantry battalions, or discharged.

Increase of Establishment.—G.O.C.C. dated 19th August 1857. "A tenth company of the established strength to be added to the Corps."

G.O.C.C. dated 12th September 1857, "The Commander-in-Chief 1857. directs it to be notified that with the sanction of Government, the number of officers of the Line allowed to do duty with the Sappers and Miners has been increased from 18 to 20, consequent on the addition of a tenth company to that Corps."

G.O.C.C. dated October 1857, increased the establishment by two Sergeants, two Corporals and two Second-Corporals, for the same reason.

Working Pay.—G.G.O. 1234 of 2nd October 1857. "The Right Honourable the Governor-General of India in Council is pleased to authorise the O.C. the Corps of Sappers and Miners at his discretion to promote a soldier from one grade of working pay to another for superior attainments in any particular trade or work forming the duties of a sapper, and to direct that the increased pay shall be given to such soldier only for the time he is employed at the particular trade or work in which he excels. The regimental order promoting any soldier to a higher grade of working pay under the authority here given, will distinctly specify for what work the increased pay is to be allowed. This order is applicable to the three Presidencies."

Increase of Establishment.—G.O.G. 368 dated 20th November 1857. "Under authority from the Government of India, the Right Honourable the Governor-in-Council directs that the Corps of Sappers and Miners be increased from ten to twelve companies.

In consequence of this, the number of Officers of the Line permitted to do duty with the Sappers was raised from 20 to 24, under G.O.C.C. 72 of 27th November 1857.

Equipment, Tents, and Carriage.—G.O.G. 398 of 15th December 1857, laid down that the Regimental Sergeant-Major, and the Quartermaster-Sergeant were each allowed one Tent (Native); and gave the equipment for a company as:—

Strength.	Distribution.	Tents, Native.	Lascars.
2 Sergeants	For the Natives	5	} 3
4 Corporals	Hospital	1	
1 Subadar	2 Sergeants	1	
1 Jemadar	4 Corporals	1	
4 Havildars	Guard and Stores	1	
8 Naicks			
2 Buglers		Total 9	3
105 Privates			
127 Total.			

Carriage for sick.

1 Dooly } for Natives

5 Bearers }

1 Dooly } for B.N.C.O.s. if 5 in number

6 Bearers }

1 cooly for carriage of medicine

Carriage for kits and cooking utensils ordinary movements—

6 B.N.C.O.s' at 75 lbs.

Cooking utensils 328 lbs.

} 1 Cart.

Carriage for tents.

11 Bullocks

6 Bamboo coolies

In the Field, the packs are carried at the public expense, and 2 bullocks are allowed for cooking utensils.

Introduction of Helmets.—C.O. dated 17th February 1858. 1858.
"Pending the arrival of a pattern undress helmet-hat, officers are permitted on all undress parades to wear the ordinary felt helmet-hat entirely covered with white, and with two folds of a red turband twisted round the temples. The two folds are not to measure more than $3\frac{1}{2}$ " at either side, and to be crossed immediately above the centre of the

1858. peak, at which point the turband is not to exceed 2" in breadth. It will be crossed again, and knotted behind and fall down from this point (Sikh fashion) 11" of the full breadth of the turband, which however should not exceed 10".

Language Examinations.—G.O.C.C. 37 of 9th April 1858, laid down that before an officer should be appointed to do duty with the Sappers and Miners, he must pass an examination for the general staff, either in Hindustani or Tamil; and General Regulations, Section XXIV., Para 5, Clause VII., was revised to read: "Officers examined as interpreters in other than the Hindustani language are not, when not qualified as interpreters, to be passed for Staff Employ, except when examined in Tamil with special reference to appointment to the Sappers and Miners."

Working Pay.—The rates of working pay were raised under G.O. 1182 of 10th August 1858, by the Honourable the President of the Council of India in Council.

1. A new rate of pay having been authorised for the R.E. with effect from the 1st January 1858, the following revised rules for working pay to the R.E. and the Honourable Company's European Sappers and Miners, are to be considered as having come into operation from the same date.

2. There shall be four rates of working pay per diem, for each working period of eight hours, viz:

Class "A"	1s. 6d.	or 12 Annas
" 1	1s. 0d.	or 8 "
" 2	0s. 9d.	or 6 "
" 3	0s. 6d.	or 4 "

3. General rules IV., V., VI., and VII. of G.G.O. 212 of 1854, remain unchanged.

4. Working pay cannot be enjoyed in conjunction with staff pay in the D.P.W.

5. Relates solely to R.E. companies in India.

6. In the Company's army the men will be classed by the O.C. Sappers and Miners under the following rules:—

7. N.C.O.s and Sappers are never to be placed in Class "A" solely on the grounds of long service and of very good and exemplary service. To be eligible for it they must be very superior tradesman, or must be possessed of highly scientific and useful attainments as Draughtsmen, Photographers, Telegraphists, Overseers of Work, etc., but a Sergeant or First Corporal not thus qualified, may be placed in Class "A" when in a situation of great trust, or in superintendence of extensive works.

8. As the number in Class "A" must be small, the greatest care is to be taken that no man is placed on it, without a strict investigation into his qualifications.

9. On receipt of this order, and at such future times as may be convenient, the O.C. the Sappers and Miners will direct a Regimental Committee to assemble, investigate, and record the claims of any N.C.O. or Sapper considered by him to be eligible for Class "A"; but the approval of the qualifications of the men, and the responsibility of placing them on this class will rest with the O.C. the Corps.

10. The proceedings of these committees with the C.O.s remarks, are to be transmitted for information, to the Secretary to the G. of I., D.P.W., and a list of all N.C.O.s and men placed on Class "A" will be kept at the H.Q. of the Corps, and also by the Military Auditor General.

11. The O.C. the Sappers and Miners can restore any man to Class "A"; but no N.C.O. or Sapper can be placed by him on it originally, until his qualifications have been recorded by a Regimental Committee.

12. Men not enrolled in Class "A" will, if N.C.O.s, be rated in the 1858.
1st Class, but if of any other rank, the rating in the 1st 2nd or 3rd Class will be regulated according to the talent and industry of the individual, the same to be determined by the O.C. the Corps of Sappers, upon a written report by the O.C. the company, under whose direction such Sappers and Miners shall have been employed.

13. N.C.O.s and Sappers shall be paid the rates of working pay of their own class, even when employed on the duties of a lower class.

14. The above rules are in modification of G.G.O. No. 212 dated 3rd March 1854, and No. 1234 dated 2nd October 1857.

Dress.—Khaki was introduced in February 1859, as the hot 1859.
weather dress for British officers and N.C.O.s, and leather stocks were discontinued in the following month. The helmet was to have a khaki cover, and in the following October officers were directed to adopt the blue facings to be worn on the khaki coat, the turband of the helmet to be of the same colour as the facings.

Adjutancy.—The appointment of an Infantry officer to the adjutancy to the Corps was sanctioned by G.O.C.C. 51 of 17-5-1859.

Survey.—G.O.C.C. 134 of 9-12-1859. "The C-in-C. directs the publication of the following regulations (which have been approved by Government) for instructing a certain number of the men of the Sappers and Miners in the higher and more scientific branches of their profession, etc:—

1. A Havildar Survey Instructor is to be henceforth attached to the Corps of Sappers and Miners. The appointment will as a rule be filled by a Native soldier or N.C.O., but when none such is available, a civilian may be appointed by special permission of H.E. the C-in-C.

2. The Instructor is to be borne on the rolls of the Corps as an effective supernumerary "Honorary Havildar," and is to receive pay, batta, clothing, and working pay as such, together with all rank, privileges, and advantages possessed by other Havildars of the Corps.

3. Under sanction of the Supreme Government, Govindu Raju is appointed Havildar Instructor of the Corps from 17-8-1859.

4. The Commandant of the Corps is authorised to retain at Regimental H.Q. for instruction in Surveying etc., one N.C.O. and five men from each company or detachment, and as a rule, no man whilst under such instruction shall be liable to be ordered to proceed on detached duty.

5. There shall be three grades of qualifications attainable in the Sapper Survey School.

1st Grade—Ability to measure out and calculate mentally tasks of every description. To execute correctly and unassisted a chain survey and to plot the same. To trace batteries, and other simple field works.

2nd „ —Ability to execute correctly a road survey with a prismatic compass, and to plot the same. To have gone through in a creditable manner a short course of architectural drawing, selected by the Commandant.

3rd „ —Ability to execute correctly a survey with the Plane Table. To draw to scale from measurement, any building (of moderate difficulty), and to make a correct estimate for erecting the same.

6. After the course of instruction noted above has once come into full operation, no man shall be eligible for promotion to the rank of Naick, until he is qualified in the 1st grade, and qualifications of

1859. the 2nd and 3rd grade respectively shall be equally compulsory for advancement to the rank of Havildar and Native officer.

7. Any sepoy or N.C.O. who has qualified himself for a certain grade, but who may not for want of vacancies or other causes have obtained the corresponding rank, will be entitled to the following addition to his military pay:—

	If a Private	If a Naick	If a Havildar
1st Grade	—1 anna per diem		
2nd Grade	—2 annas do.	1 anna per diem	
3rd Grade	—3 annas do.	2 annas do.	1 anna per diem.

8. Certificates of qualification shall be granted by the Commandant, and an extract from regimental orders shall be sufficient voucher for payment of the extra allowance.

9. In order to provide for the instruction of the several companies detached from regimental H.Q., the best qualified man in each company shall be appointed a "Deputy Instructor" and shall if a Private, have the (honorary) rank and pay of a Naick—if a Naick, that of Havildar—with such extra military pay as he may be entitled to under para 7.

10. Provisional certificates of qualification in any grade may be granted by the O.C. a detachment, who will report the same to regimental H.Q., and the Commandant will on his tour of inspection, examine all men in possession of such certificates, with a view to confirming the same.

11. These "Deputy Instructors" of companies shall be appointed by the Commandant, who shall have also power at any time to take away the honorary rank and emoluments on account of inefficiency or misconduct.

12. No N.O. shall be appointed "Deputy Instructor" of a company, and in case of a Havildar being so appointed, he will receive as remuneration twice the amount of extra military pay to which he would otherwise have been entitled under the provisions of para. 7.

13. An honorary Naick Instructor on being promoted to a full Naickship in the Corps, may, if recommended, still continue to hold his appointment as Instructor, with the superior rank, (honorary) of Havildar.

14. The honorary Naicks and Havildars (Instructors) shall be borne on the strength of the Corps as effective supernumeraries.

15. No Sepoy or N.C.O. shall be admitted to the survey school who has not gone through the usual training, as noted below, and is not considered proficient in at least two of the branches enumerated:—

Parallels, Batteries, Single Sap, Flying Sap, Mining, Blasting, Pontooning, Rowing, Brickmaking, Knotting and Splicing.

16. Until the system has come into partial operation, the Commandant is authorised to promote men as heretofore, and after that he may for a time promote to the grade of Havildar, men who have passed the 1st, and recommend for the rank of a Native officer, such as have passed the 2nd test.

860. **Second War in China, 1860.**—"A" and "K" Companies served with the second expedition to China, with the force under the command of Lieut.-General Sir J. Hope Grant, G.C.B. They embarked at Madras on 28th March 1860, with the following officers:—

Captain H. M. J. Shaw-Stewart M.E., Commanding.

"A" Company—Capt. H. F. Dakeyne, 22nd M.N.I.

Lieut. A. F. Filgate, M.E.

"K" Company—Capt. N. Swanston, 37th Grenadiers.

Lieut. M. E. Foord, 23rd N.L.I.

Lieut. D. H. Traill, R.E.

Assistant Surgeon, R.E. Pearse was in medical charge.

Hong Kong was reached on 27th April, and after a three weeks' stay at Kowloon they sailed again on 18th May, and arrived in Talienwan Bay on 16th June. Lieut. H. J. G. Gordon, R.E., and a sergeant joined "A" Company at Hong Kong, having arrived from Madras on the 16th May, and during the stay in Talienwan Bay, Lieut. Gordon was accidentally drowned. The Sappers were camped near Talienwan till 24th July, when they re-embarked, and moved to Pehtang, landing there on 7th August. They were present at the action in front of the entrenchments at Sinho on 12th August, and on the night of the 13th, they formed part of a working party that was sent in the direction of Tang-koo to throw up cover for the riflemen. After reconnoitring the fort closely, the party set to work, and by daybreak a good line of cover had been thrown up about 400 yards from the fort. About 6 a.m. the 1st Division advanced to the attack, and parties of the Madras Sappers accompanied the force with scaling ladders and powder bags, the artillery silenced the enemy's fire, and the pontoons and scaling ladders were called for, but before they could reach the ditch, the Tartar garrison had fled. During the 18th and 19th small bridges were prepared to take the artillery over the canals and ditches for the attack on the Taku Forts, and on the 19th these were placed in position; on the night of 20th every available Sapper was at work on the batteries, and these were completed so quietly that the Tartars did not discover them till the troops were in position at 4-30 a.m. on 21st, when they opened fire. During the assault the Sappers divided into four parties, accompanied the stormers, a pontoon party under Lieut. Pritchard, R.E., a ladder party under Lieut. Hime, R.E., a party for removing obstacles under Lieut. Traill, R.E., and a party with powder bags under Lieut. Clements R.E.; Lieut. Traill, joined the ladder party and was one of the first to enter the fort; Lieut. Filgate with a party of Sappers was highly praised for the rapidity with which under a heavy fire he made a causeway for heavy artillery across a canal close to the fort. Part of "K" Company was left at the Taku forts under Lieut. M. E. Foord and Lieut. Traill to demolish the forts on the south side of the river. On 10th September Captain Shaw-Stewart received orders to take "A" Company to Tientsin, and on arrival there he was ordered to join the army as soon as possible, leaving the company to follow; he caught up the army on 20th September at Changkiawan, in time to be present at the battle of Palichow. By the beginning of October the siege train having arrived at Tungechow, escorted by "A" Company with whom were Captain Dakeyne and Swanston, and Lieut. Filgate, the army was ready to advance, and on 3rd October, moved round the N.E. angle of Peking to the open plain beyond. The convention of peace was signed on 24th of October, and the Madras Sappers left Peking on 7th November with the 2nd Division under Sir Robert Napier; they reached Tientsin on 12th, and embarking on gunboats were taken to the mouth of the Peiho, where they transhipped and sailed on 17th November for Hong Kong. The Governor in Council at Madras in noticing Captain Shaw-Stewart's reports to the Commandant, observed—"that the reports are most creditable to the detachment of the Madras Sappers recently employed in China, where they appear to have well sustained the ancient reputation of their Corps."

The following is an extract from the order issued by the Governor-General on the conclusion of the war:—

Camp, Jubbulpore, the 17th January 1861. His Excellency the Viceroy and Governor-General of India has much satisfaction in publishing for general information the subjoined letter dated the 21st November 1860, from Lieutenant-General Sir J. Hope Grant, GCB, Commander of the Forces in China, bringing to notice the services

360. during the campaign in that country of the native troops of all arms which proceeded to China from Bengal, Madras, and Bombay.

The Governor-General congratulates the troops on the high testimony which they have earned for themselves from their distinguished commander by their exemplary conduct in Camp and Garrison, and by their valour in the Field.

* * * *

Head-Quarters, Tientsin, 21st November 1860.

MY LORD.—Peace having been concluded with this country, and many of the native troops serving in the Expeditionary Force being about to return to India, it becomes my duty to bring to your Excellency's notice the services of the Regiments and Corps of Her Majesty's Indian Army which have been serving during the campaign.

* * * *

The two companies of Madras Artillery under Captain Hicks, and the two companies of Madras Sappers under Captain Shaw-Stewart, rendered good and useful services in the operations which preceded, and led to the fall of the Taku Forts. The latter Corps was most energetic in working without relief at the construction of the batteries, and have always shewn themselves to be cheerful and willing workmen.

J. HOPE GRANT, Lieut.-General,
Commander of the Forces.

Captain Shaw-Stewart, R.E., was recommended to favourable notice for his exertions in trench duty, and he was accordingly promoted to the rank of Major in the Army from the 15th February 1861.

The companies of Madras Sappers worked continuously, rendering most valuable aid.

Lieut. Filgate, M.E., was favourably mentioned for directing a working party under fire during the attack.

The Honours "TAKU FORTS" and "PEKIN" were granted to these companies.

Pay and Allowances.—A revised scale of pay for B.N.C.O.'s was introduced by G.O.G. 111 of 20th March 1860, only to come into force for those then serving, when it proved advantageous to them by promotion.

	In garrison within 200 miles of the Presidency.	On Field Service, or beyond 200 miles from Presidency.
Regtl. Sergt.-Major	Rs. 63 15 8	Rs. 65 3 7
Regtl. Q.M.S.	" 56 8 5	" 57 12 4
Sergeant	" 36 10 5	" 37 14 3
Corporal	" 26 11 4	" 27 15 3
2nd Corporal	" 22 0 10	" 23 4 8

The allowances granted to officers serving in the Corps were amended under G.O.G. 116 of 22nd March 1860, as follows:—

"Officers attached to the Sappers and Miners shall, when permanently in command of a company, draw as extra remuneration Rs. 100 per mensem, under all circumstances whilst present with the company or part of it, whether at Head-Quarters of the Corps or on detachment in the Field. In future no officer shall be placed permanently in command of a company of Sappers until he shall have passed an examination in Field Engineering, embracing the subjects given below, and will also be expected to have some general knowledge of Permanent Fortification.

- (a) The tracing of parallels and approaches.
- (b) Batteries of all kinds, field powder magazines; field works such as redoubts, redans, etc., single, double, and flying sap.
- (c) Mining, pontooning, and blasting.

Certificates of qualifications will be granted by the Commandant of the Corps, who, in notifying the same for the information and approval of H.E. the C-in-C., will forward the examination papers to the A.G. of the Army. 1860.

The names of all officers obtaining such certificates (with date of examination) will be notified in the Government Gazette, and the honorary mark, "M.E." (Military Engineer) will be affixed to their names in the army list. It is to be understood that this examination in no way cancels the certificate in Surveying required by the general regulations for all Sapper officers 12 months after their appointment to do duty with the Corps, and if after a further interval of six months an officer shall not have qualified also in Military Field Engineering, he will on the recommendation of the Commandant be remanded to his regiment. The Adjutant and Quartermaster are to be considered, in common with other officers of the Corps, liable to examination, and entitled to all the corresponding advantages, but with the understanding that they shall not be appointed to the actual command of a company to the prejudice of any other qualified officer at Head-Quarters, who may be available for the duty. The allowance is claimable for only one company.

To these rules the following was added under G.O.G. 511 of 11th December 1860 :—

"Officers of Engineers attached to the Sappers and Miners are exempted from passing the "M E" examination before obtaining the permanent command of a company."

Officers and B.N.C.O.'s.—Extract from Despatch No. 30 dated 18th January 1861 from the Secretary of State for India. 1861.

13. The Engineer Corps of the several Presidencies will continue to be, as at present, principally "Corps of Officers," having no European soldiers attached to them. But Engineer officers may be posted, as at present, as far as they can be made available, to the Corps of Native Sappers, which must be maintained on the present footing, which in many points resembles that of Irregular Native Infantry.

14. It is very desirable to continue the practice of posting a large number of European N.C.O.s. to the Native companies of Sappers and Miners. These men have hitherto been obtained by selection from the men enlisted for Artillery and Infantry, and have been liable to be remanded to their regiments on misbehaviour.

15. The men so selected have undergone a special course of training at Chatham, and after serving in India in the Sappers and Miners, and acquiring some knowledge of the Native language, a portion of them who were able to pass the requisite examination were appointed Overseers in the P.W.D.

16. I have communicated with H.R.H. the General C-in-C. regarding the best method of providing men for this duty, and for keeping up the supply of vacancies in the P.W.D., a considerable portion of whom have been drawn hitherto from the Local European Sappers. H.R.H. is of opinion that it would be advisable to try the experiment of obtaining volunteers from the R.E., such men, as volunteers, being required to sign a declaration of their willingness to be remanded, in the event of their being guilty of gross misconduct to the R.A. in India, as there are no companies of R.E. in that country. Should a difficulty arise as to obtaining sufficient volunteers from the R.E., volunteers may be taken from the Line, and trained at Chatham, like the Engineers soldiers who have hitherto been selected from the Artillery recruits of the Indian Forces.

1831. 17. These men could be remanded to any Line regiment in India.

It was laid down in G.O.G.G. 960 dated 22-10-1861, that Infantry officers doing duty with the Sappers and Miners are permanently appointed, in the same manner as officers permanently doing duty with Irregular Corps, and that therefore service in the Sappers and Miners would count as Staff Service for the purposes of promotion in the Staff Corps.

1862. **Musketry.**—The following scale of practice ammunition was laid down by G.O.G. 16 of 10-1-1862, and is the first instance I have been able to find of ammunition being allotted to the Sappers and Miners for practice :—

Balled ammunition, 50 rounds per man.

Blank " 100

Percussion caps, one-tenth in excess of number of rounds.

Reduction of Establishment.—Under G.O.C.C. 14 dated 30-1-1862, the number of companies in the Corps was reduced to 10, as "No portion of the Corps is now required to be retained in the Pegu Division."

The two junior companies "L" and "M" were accordingly reduced by pensioning such men as were not in every respect fit for active service in the Field, provided they had completed the prescribed period of service. Short service men who were considered to have established special claims on account of service in the Field, were granted donations in proportion to their supposed merits. Those not having any such claims were paid up, and discharged, with the ordinary gratuity and travelling allowance.

The companies were finally broken up on 23rd July 1862.

Equipment, Tents and Carriage.—Under G.O.G. 280 of 15-7-1862, the following alterations were made in the equipment laid down by G.O.G. 398 of 1857 :—

An additional tent Native was allowed for the Natives.

One tent European was allowed for the six B.N.C.O.s in lieu of two tents Native. One lascar was abolished; and carriage was increased to 14 bullocks and 7 bamboo coolies. Tents for families were also sanctioned according to the number entitled, and two tarpaulins were allowed for the tent European.

Allowances.—A contingent allowance of Rs. 50 per mensem, was sanctioned for the first time for a company of Sappers and Miners under G.O.G. 412 of 21-10-1862. This allowance to cover the expenses of writing, stationery, repair of accoutrements and arms, and in ordinary circumstances the cost of repairing tools.

865. **Allowances.**—Under G.O.G. 17 of 13-1-1865, the Corps was exempted from the rule which limits the grant of compensation for dearness of rice to Troops that are not in receipt of Batta.

This order had retrospective effect from the 1st May 1864, being the date from which the provisions of G.O.G. No. 194, dated 25th idem, came into operation.

Move of the Head-Quarters of the Corps.—The H.Q. of the Corps arrived at Bangalore from Dowlaishwaram on 12th March 1865.

Precedence, British and Native Troops.—G.O.G. 213 dated Fort St. George 6th June 1865.

G.O.G.G. 503 of 1865 is republished :—

The Right Honourable the Governor-General in Council is pleased to notify for future guidance that, on all occasions of parade, British Troops are to take precedence of Native Troops of every branch of the service.

Native Corps will take precedence among themselves in the following order:— 1865.

1. The Body Guard has the precedence of all Native Corps whatever.
2. Horse Artillery, whether mounted or dismounted, take the right of all Cavalry.
3. Cavalry, whether mounted or dismounted, take the right of all Infantry.
4. Foot Artillery take rank after Cavalry.
5. The Corps of Sappers and Miners takes the right of all Native Infantry.

* * * * *

These rules are applicable to the three Presidencies.

Skeleton Company of Royal Engineers, and Appoint- 1867.
ments.—G.O.C.C. 9 dated Fort St. George 26-1-1867.

The following extract from G.O. by His Excellency the Commander-in-Chief in India, is with the sanction of Government, republished and made applicable to this Presidency:—

No. 277, dated Camp Agra, 20-11-1866.

1. Under instructions from Government, H.E. the C-and-C. in India is pleased to direct the publication of the following rules regarding the maintenance in each Presidency of a Skeleton Company of Royal Engineers, from which men will be selected, according to the wants of the Presidency concerned, for the D.P.W. and Native companies of Sappers and Miners.

2. In furtherance of this end, two companies have been added to the establishment of Royal Engineers at Chatham, to increase the means of training recruits for employment in India.

3. Subject to the approval of H.R.H. the Field Marshal Commanding-in-Chief, volunteers for service in India will be accepted from any rank and trade, provided they are men of good character, who have served not less than 2 years at the time of their embarkation for India, and have then not less than 5 years of unexpired contract, original or renewed.

4. The annual drafts of Engineer Soldiers will be sent out to
1 Colour Sergeant each Presidency, under the command of Engineer
5 Sergeants Officers, and will be provided with N.C.O.'s in
6 Corporals proportion to the establishment of a company of
6 2nd Corporals Royal Engineers.
2 Buglers
100 Sappers

5. The Colour Sergeant will hold the acting rank of Sergeant-Major whilst so employed with the detachment, and will revert to the grade of Sergeant, when the detachment reaches Head-Quarters in India.

6. Detachments of Engineer soldiers arriving in India will proceed to the Sapper Head-Quarters of Presidencies under the command of the Engineer officers who brought them out.

7. These skeleton companies are to be placed under the Commandants of the Corps of Sappers and Miners in Bengal, Madras, and Bombay respectively, the immediate charge being taken by an officer of R.E.

8. Each company will have a permanent strength of one Second Captain, who will perform the duties of Adjutant; one Colour Sergeant, who will perform the duties of Pay Sergeant; with a fluctuating establishment of N.C.O.'s according to the number of Privates from time to time doing duty with the company, according to the scale specified in para. 4.

9. The Commandant and Adjutant of Sappers and Miners in each Presidency, will always be officers of R.E.; the former a Field officer if possible, but not of lower rank than First Captain, and the latter a Second Captain if practicable.

10. The drafts of each season on arrival at Head-Quarters, will join the R.E. company in their several grades.

11. N.C.O.'s who may be in excess of the establishment, will be borne as supernumeraries until absorbed, and Privates will remain in the ranks until promoted in their own company, in Native companies, or in the D.P.W.

12. Every European Engineer soldier in India, no matter how employed, will be borne on the strength of the R.E. company attached to his Presidency.

13. Men serving at Head-Quarters, will be instructed and fitted for service in the D.P.W., and as N.C.O.'s of Native companies of Sappers and Miners.

14. On permanent transfer to departments, the places of effective N.C.O.'s will be filled up in companies at Head-Quarters by absorption of supernumeraries, or promotion, as the case may be.

15. Men in civil employ, may be permitted to return to their companies, with the sanction of Government, either at the recommendation of a Medical Board, or at their own request, in either case in the grade which they held when they quitted their respective companies.

16. N.C.O.'s reduced to the ranks by the sentence of a Court-Martial or otherwise, will, unless there be good reasons to the contrary, be forthwith transferred under the orders of the C-in-C. to a company which is not on the Indian Establishment. The cost of such transfer being defrayed by the Indian Government.

17. An Engineer soldier may be transferred from an Indian to a Home company at the recommendation of a Medical Board, in which case the grade he is to hold in the company to which he is posted, will be determined by H.R.H. the Field Marshall, Commanding-in-Chief, in reference to his character, length of service, and the position which he would occupy had he not volunteered for Indian service.

18. Volunteers for India will remain in the Indian companies throughout the period of their engagement, unless removed as above provided, on account of misconduct or ill health. They will enjoy the same privileges of pay and pension as men originally enlisted for the service of the Indian Government, and in respect of pension the whole period of service of an Engineer soldier will be reckoned as "Service in India."

19. Engineer soldiers will be transferred to the Unattached List from the date they join they P.W.D., and those under the rank of Sergeant will be eligible for promotion to that grade after approved effective service in the Department with uniform good conduct for the full period of twelve months, if recommended by their immediate superiors for such promotion, provided their total service as soldiers be not less than three years; such rank, however, is conditional on their remaining on the Unattached List, and is forfeited on remand to Regimental Duty, from whatever cause, except for discharge.

20. The rank of Sergeant, attained under this order, qualifies for promotion to the Warrant Grade in accordance with Chapter I, para. 5, of the P.W. Code.

21. On service the R.E. companies, in whatsoever strength they may happen to be, will always take the Field with Sapper Head-Quarters; any Engineer soldiers ordered on service from civil employ will join these companies in their actual rank, and will be employed at the discretion of the Commanding Engineer, according to the wants of the service.

22. Each soldier's attestation and record of service will be kept at Sapper Head-Quarters of Presidencies, his record of character and service being filled up from the periodical return of the Department under which he serves.

23. The monthly returns of companies will be made to the Adjutant-Generals of Presidencies, and duplicates of the same will be forwarded by the respective Commandants to the D.A.G., R.E., in England.

Search Party to the Little Andamans—One Jemadar, one Havildar, and six Sappers of "D" Company accompanied an expedition which left Port Blair on 6th May 1867, to ascertain the fate of the crew of the *Assam Valley* who were supposed to have fallen into the hands of the natives of the Little Andamans. Lieut. Much of H.M. 24th, endeavoured to land on 7th in three boats, but only one in which were Jemadar Muttien and four Sappers succeeded in landing, and they had to get out of the boat into nearly 5 feet of water. They found the remains of the illfated crew, and then as the natives were attacking them, and getting on to their flanks, they endeavoured to re-embark, but by this time the surf was running 15' to 20' high, and the boat upset, one officer being drowned; after one attempt with a raft, from which some of the party were swept off, and three attempts with a boat, they all regained the ship but almost destitute of clothing. They returned to Port Blair next day, and Lieut. Much reported:—

"I cannot speak too highly of the manner in which all behaved. x x x I have likewise great pleasure in reporting the excellent manner and bearing of the x x x x also of the Sappers and Miners under Jemadar Muttien, who under most trying circumstances behaved with every degree of pluck, rendering Mr. Dunn and myself, when perfectly helpless in the surf, the greatest assistance, and helped us out to the boat when Mr. Douglas came to rescue us.

Honours and Distinctions.—G.O.G.G. 1032, dated Fort St. George 30th December 1867. The following extracts from G.O.G.s are republished:—

No. 1032 of 1867. His Excellency the Governor-General in Council is pleased to admit Jemadar Muttien of the Madras Sappers and Miners to the 3rd Class of the order of Merit, in consideration of his gallant conduct when attached to the expedition which proceeded to the Little Andaman Island in May 1867, in search of the Commander and some of the crew of the *Assam Valley*.

Working Pay of R.E. and European Artificers.—G.O.G.G. 787 dated 8th August 1867. "A new rate of working pay having been sanctioned for the artificers of the Corps of Royal Engineers, the same rates will be made applicable to the European artificers of the several Corps of Sappers and Miners in India. from the 1st August 1867.

2. From that date the designation and daily rates of working pay will be as follows:—

1st rate	2 shillings,	or 1 rupee.
2nd "	1 shilling 6 pence,	or 12 annas
3rd "	1 " 0	" 8 "
4th "	0 " 9	" 6 "
5th "	0 " 6	" 4 "

1867.

3. As heretofore, the working day will be considered equal to eight hours. For shorter or longer periods, the proportion of working pay will be—

For less than 2 hours' labour—	nil.
For 2 hours' labour—	$\frac{1}{4}$ day's working pay.
From 2 to 4 hours' labour—	$\frac{1}{2}$ day's "
From 4 to 6 hours' labour—	$\frac{3}{4}$ day's "
From 6 to 8 hours' labour—	a full day's
For 10 hours' labour—	$1\frac{1}{4}$ day's working pay.
For 12 " "	$1\frac{1}{2}$ "
For 14 " "	$1\frac{3}{4}$ "
For 16 " "	double working pay.

Working parties employed in water will be allowed at the rate of a day and a quarter's pay for one day's work.

4. The first rate is only to be given to those capable of producing work of a superior kind, and no man is to be placed in this class without a strict investigation into his qualifications by a Regimental Committee.

5. Serjeants, Corporals and Second Corporals may receive the first rate of working pay when employed in situations of trust, or in superintendence of works, without being brought before a Regimental Committee. On ceasing to occupy such position, they will revert to the second rate of working pay, unless pronounced by a Regimental Committee fully qualified for the first rate as artificers.

6. Lance-Corporals and Sappers are never to be placed on the first rate, either as specially employed men of superior attainments, or as artificers, until they have been fully tested and found qualified for it by a Regimental Committee.

7. The second rate is the ordinary rate of working pay for all full Non-Commissioned Officers when not eligible for the first rate. It is also the ordinary rate for men of other ranks who are good artificers, and likewise for those possessing superior attainments who are not actually employed as miners or labourers.

8. The lower rates of working pay are intended for miners and labourers—these classes, when so employed, are never to be placed on either the first or second rate of working pay. The fifth rate, as a rule, should be reserved for those mechanics or labourers who are habitual drunkards, or bad characters.

9. When full Non-Commissioned Officers, Lance-Corporals, or Sappers are placed on the first rate as artificers, they continue on that rate at all times without reference to the nature of the employment, unless reduced for misconduct. This rule will also apply to all ranks of artificers on the second rate.

10. Non-Commissioned Officers and men of superior attainments, when specially employed as draftsmen, surveyors, telegraphists, photographers, &c., will, while so employed be eligible for the first rate of working pay, but will revert to the second rate when the special employment ceases; should they, if Lance-Corporals or Sappers, then be employed as miners or labourers they will only be eligible for the third rate.

11. Although the third rate is to be the maximum rate of working pay for miners and labourers when so employed, this rule is not to be regarded as precluding such men from being mustered as artificers, and receiving the higher rates of working pay, if they acquire a competent practical knowledge of any of the trades required in the Corps.

12. The classification of men for the working pay will rest with the Officer Commanding the Corps of Sappers and Miners at each Presidency, who, at such time as may be convenient, will convene a Regimental Committee of Officers, who, after taking the fullest evidence as to the capabilities, and inspecting the work of each individual brought before them, will record their opinion as to his eligibility or otherwise for advancement to the first rate of working pay. In all cases a portion of the work must, if possible, be executed in the presence of the Committee. The final decision and responsibility of placing such men on this scale, will rest entirely with the Officer Commanding the Corps. 1867.

13. General zeal and activity displayed by each individual whilst on work, will be considered as special elements of qualification for advancement to a higher rate of working pay.

14. A register should be kept of all Non-Commissioned Officers and men placed on the first rate of working pay at the Head-Quarters of the Corps, and also by the Controller of Military Accounts at the Presidency, to whom the names of all so graded will be forwarded by the Commanding Officer.

15. Non-Commissioned Officers and men at present receiving working pay at 1s. 6d. a day under the provisions of G.G.O. No. 1182 dated 10th August 1858, are to be advanced to the first rate of working pay now specified, without undergoing further examination, provided in all cases that they are employed on the same description of work as that upon which they were originally placed on Class A. If not so employed, they will be dealt with under the conditions specified in paragraph 7.

16. A sentence to forfeiture of working pay, or reduction to a lower rate, is not to affect the good conduct pay of men of the Corps.

17. Sentences of forfeiture, or of reduction of rates of working pay, are only to be applied to such offences, excepting acts of drunkenness, as are committed by the men while employed on the works, and may constitute the whole or a part of the punishment.

18. Acts of drunkenness committed on or off the works may be punished by reduction to a lower rate of working pay added to any other punishment.

19. When the Commanding Officer deems it necessary, under existing orders, to inflict the punishment of reduction to the next lower rate of working pay, such reduction will not be for a greater or less period than two months, reckoning from the date of termination of any other punishment that may have been awarded at the same time; and if no other punishment be given, the two months will then reckon from the date on which the sentence was ordered. The entry in the Defaulters' Book of any crime or crimes committed while on the works, or of drunkenness off the works, during the two months, will prolong the reduction for a further period of two clear months from the date of the last entry, or the termination of punishment awarded.

20. When in very bad cases it may be necessary, as an example, to reduce men more than one rate at a time, the period on the lowest rate specified by the Commanding Officer, will be for two months (reckoning as mentioned in the preceding paragraph), and a like period will also be passed on each of the intermediate rates, until the men regain that from which they were reduced. The entry in the Defaulters' Book of any crime or crimes committed while on the works, or of drunkenness off the works during the two months the men are on the lowest rate

1867. reduced to, will prolong the reduction to that rate for two clear months from the date of the last entry, or termination of punishment awarded; and in like manner, if the record of offences takes place after the men have been raised to one or more of the intermediate rates (but have not regained the particular rate from which they were reduced by the sentence), such record will prolong the probationary period on the intermediate rate then received, for two clear months from the date of last entry, or termination of punishment awarded.

21. A conviction by Court-Martial will not affect the rate of working pay, unless the crime be "Desertion", in which case the offender will, on first joining after his conviction, be placed on the lowest rate of working pay for two months, and likewise pass a period of two months on each of the intermediate rates, until he regains that which he held at the time of his desertion. Pending his attainment of that rate, he will be liable to the penalties consequent upon crimes committed on the works, or of drunkenness off the works, being recorded against him in the Defaulters' Book, as specified in paragraphs 19 and 20.

22. A register of the rate of working pay to which each man is entitled, is to be kept on the inside of the cover of his pocket ledger, and care is to be taken that every change in the rate of working pay is, with the date, to be correctly entered in the register by the officer in charge of the company or detachment, who will verify each entry by his signature in the proper column. The entry of the first rate is invariably to be signed by the Officer Commanding the Corps.

23. The working pay of men of the Corps will not appear in their ledger accounts, neither will it be liable to stoppage or deduction on account of company debts. The men may, however, make voluntary instalment payments from their working pay towards liquidating those debts.

24. This order is applicable to the three Presidencies, and is in supersession of all previous orders on the subject.

War in Abyssinia, 1867—68. "K" Company, with Captain Elliot, N.I., Lieut. Bird, S.C., and Lieut. Coaker, R.E., arrived in Abyssinia on the 8th December 1867, and Major H. N. D. Prendergast, R.E., V.C., Commanding the Detachment, with Captain M. E. Foord as Staff Officer, landed on the 12th idem together with "G" Company, Lieut. Morris, R.E., Lieut. Protheroe, S.C., and Lieut. Mainwaring R.E., and "H" Company, Lieut. Pennycuik, R.E., and Lieut. Cunningham.

The following is an extract from the report of the Commanding Engineer at the close of the campaign :—
Madras Sappers.

"The 'G' Company was posted at Zoula and Kumayli during the whole campaign. The services performed by this company on the Public Works at Zoula, on the Railway, and on Kumayli Water-works, have been excellent.

"The sepoys of this company excavated a well on the Railway line 85 feet in depth, without lining of any kind, and proved themselves very skilful workmen."

"I have much pleasure in recording the good services rendered by Lieutenant Morris, R.E., commanding this company, in superintending the water arrangements at Kumayli.

"These services have proved most beneficial to the Transport Train Establishment at that post.

"I bring to favourable notice the services of Lieutenants Protheroe and Mainwaring, assistants to Lieutenant Le Messurier, who was in charge of the water supply of the expedition. 1867.

"The 'H' Company was employed during the whole campaign on Public Works at Zoula, and was most industrious, ever ready and willing to undertake any work required of it. Lieutenant Pennycuik, R.E., conducted his duties efficiently. Lieutenant Cunningham R.E., was detached to Antalo, and Cornet Dalrymple was sent to the front in charge of stores.

"The 'K' Company commenced work on the Sanafe Pass after a short stay at Zoula, and afterwards when joined by Head-Quarters, improved the track route between Antalo and Magdala, rendering it suitable for laden mules and elephants, and was present at the action of Arogi, and taking of Magdala. Captain Elliot N.I. commanded, Lieutenant Bird being Subaltern Officer."

Lieut. Coaker, R.E., was detached from the company on its arrival at Zoula, and worked with the 4th Company Bombay Sappers throughout the campaign.

On the 10th April 1868, the action of Arogi was fought on the platform before Magdala. The "K" Company was on the right of the British line, and aided by the rockets of the Naval Brigade, it prevented a detachment of the enemy from turning the flank of the 1st Brigade, and dispersed it. 1868.

Major Prendergast commanded the company during this action.

The force that assaulted Magdala on the 13th April consisted of the 2nd Brigade led by the 33rd Regiment, headed by a ladder party of the Royal Engineers and "K" Company Sappers and Miners. Before an entrance was forced, Captain Elliot, Cornet Dalrymple, and Serjeant Balding had received contusions, and Havildar Kistnasami had been severely wounded in the arm.

Extract from the despatches by Major-General Sir C. Staveley, K.C.B., Commanding 1st Division, dated 14th April, 1868.

"I wish to bring the names of the following officers to the notice of His Excellency:—Major Pritchard, R.E., (who was wounded), and who mentions the able assistance he received from Captain Elliot (Commanding 'K' Company Madras Sappers and Miners), Captain Foord, Lieut. Bird, Cornet Dalrymple, and Surgeon Pearl."

"I wish to recommend to the favourable notice of the Commander-in-Chief, Major Prendergast, V.C., the senior officer with the R.E., and companies of Madras Sappers and Miners".

In Sir Robert Napier's General Order of the 22nd April 1868, he addressed the force as follows: "You traversed, often under a tropical sun, or amidst storms of rain and sleet, 400 miles of mountainous and rugged country. You have crossed ranges of mountains, (many steep and precipitous) more than 10,000 feet in altitude, where your supplies could not keep pace with you. In four days you passed the formidable chasm of the Bashilo; and when within reach of your enemy, though with scanty food, and some of you were for many hours without either food or water, you defeated the army of Theodore, which poured down upon you from its lofty fortress in full confidence of victory.

"A host of many thousands have laid down their arms at your feet. You have captured and destroyed upwards of 30 pieces of artillery. * * * You stormed the almost inaccessible fortress of Magdala, defended by Theodore and a desperate remnant of his chiefs and followers."

In his Despatch, dated 1st June 1868, Sir Robert Napier wrote as follows: "The works of the Madras and Bombay Sappers and Miners

1868. under Major Prendergast, V.C., R.E., and Captain MacDonnell, R.E., have been singularly valuable and important," and again, "I desire to express my very high appreciation of the services of the officers commanding the several corps of the Expeditionary Force, and of the officers, non-commissioned officers and soldiers who have served under them during the campaign. * * * Major Prendergast, V.C., R.E., Madras Sappers and Miners."

The three companies returned to India in June 1868.

The following is an extract from the despatch by Major-General Russell, commanding at Zoula, dated 3rd June 1868:—

"On taking command, the troops were thus distributed:—

Zoula—x x x x x One company Madras Sappers.

Working on railway between Zoula and Kumayli—x x x a portion of a company of Madras Sappers and Miners.

Kumayli—x x x x x a portion Madras Sappers.

The Madras Sappers have been constantly at work increasing the width of the pier, making embankments along the shore to prevent the invasion of the sea, erecting hospital and other buildings, and assisting in the making of the railroad.

Those of the Sappers at Kumayli were employed on the railroad and at the wells, and they all performed their work with untiring energy."

On the conclusion of the war the following extract from a Military Despatch No. 70 dated 3rd July 1868, from the Secretary of State for India, was published in the *Fort St. George Gazette*, of the 4th August 1868:—

"I transmit for the information of your Lordship's Government a copy of a Despatch which, in accordance with the command of Her Majesty, I have this day addressed to the Governor-General in Council, conveying to the Government and Army of India the thanks of Her Majesty for the service rendered by them in the conduct of the operations in Abyssinia, the termination of which in the most satisfactory manner has been recently reported to Her Majesty's Government."

* * * *

"I especially desire to record the high sense which Her Majesty's Government entertain of the zeal and alacrity displayed in the despatch of the detachment of the Madras Sappers and Miners to take part in the expedition, and of the excellent service rendered by that body of men during the campaign, in the course of which they well maintained the high reputation of the Madras Army, no less than of the distinguished Corps which they represented."

Major Prendergast received a Brevet Lieut. Coloneley.

Subadar Perumalu, and Jemadar Chinnien were admitted to the 2nd Class of the Order of British India.

Honours and Distinctions.—Extract from G.O.G.G. 1181 of 30th November 1869. "Her Majesty has been graciously pleased to approve of the undermentioned Regiments and Corps of the Indian Army bearing the word "Abyssinia" on their Colours or Appointments."

x x x x x x x x

"G" Company Madras Sappers and Miners

"H"

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"K"

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R.E. Skeleton Companies.—G.O.G.G. 418 dated 22nd April 1868. The following military letter from the Right Honourable the Secretary of State for India, No. 96 dated the 16th March 1868, is published for general information:—

To His Excellency the Right Honourable the Governor-General in Council.

Para. 1. I have now to acquaint you, with reference to previous despatches on the subject, that Her Majesty has been pleased to approve, with a view to the better organization of the Royal Engineers employed in India, that three Skeleton Companies be formed, one for service in each Presidency, to be considered as Supernumerary to the establishment of the Corps, and to be styled the 41st Company for Bengal, 42nd Company for Madras, 43rd Company for Bombay, and the following establishment for each company:—

1 Second Captain

1 Colour Sergeant.

The officers to be taken from the Royal Engineers doing duty in India, and the N.C.Os. from among those serving in that country, who are now borne as supernumeraries to the Corps.

2. This arrangement is to take effect from 1st of the month succeeding that in which the order is received at each Presidency for the formation of the company.

With reference to para. 2, it is hereby notified that the above despatch was received at this Presidency on 18th April 1868, the arrangement will therefore take place from the 1st May 1868.

Pay of European Soldiers, Sappers and Miners.—G.O.G. 417 dated Fort St. George, 5th May 1868. It is notified that the monthly rates of pay of N.C.O.s and Soldiers of R.E. serving in India, laid down in G.G.O. No. 1035 of 1st November 1867. (Madras G.O.G. 1867, 15th November 1867) are applicable to the European N.C.Os. and Soldiers of the Sappers and Miners, as well as to the companies of R.E.

2. When they are in departmental employ, and not in receipt of consolidated salaries, the present rate of pay, calculated for any month in the year, will continue to be the authorized scale.

3. The new rate of pay will not apply, so long as they continue in their present rank, to men who under the existing scale of pay of the Sappers and Miners receive more than under the R.E. rate.

Working Pay.—G.O.G.G. No. 717 dated Simla 22nd July 1868. The following extracts from G.O.s by the Government of India are republished:—

No. 717 dated Simla the 22nd July 1868. The Right Honourable the Governor-General in Council is pleased to sanction revised scales of working pay for the Native troops in the three Presidencies.

2. Working pay will be allowed when the troops are employed in Military or Public Works, other than those connected with their own lines or parades in Cantonments, or the improvement or protection of their position or camp on service.

3. The following rates will be allowed in future:—

SAPPERS AND MINERS.

Subadars		8 annas.
Jemadars		6 "
Non-Commissioned	1st Class	4 "
Officers and	2nd "	3 "
Rank and File	3rd "	2 "

The classification observed in G.G.O. No. 212 dated 3rd March 1854 and No. 1234 dated 2nd October 1857, will continue to be carefully observed.

The working day will be reckoned at 8 hours, and no working pay will be granted for less than two hours labour. For broken periods the proportions of working pay will be:—

For 2 hours—	$\frac{1}{4}$ day.
From 2 to 4 hours—	$\frac{1}{2}$ "
From 4 to 6 hours—	$\frac{3}{4}$ "
From 6 to 8 hours—	full day.

and for longer periods in the same proportion.

Working parties employed in water, will be allowed at the rate of a day and a quarter's pay for one day's work.

Musketry.—The S.I.R.A. Meeting was started at Bangalore in this year, and Lieut. Hamilton won the Revolver Prize, and the Champion Stakes, the latter being fired at 700 and 800 yards

In 1869, Captain H.R. Elliot won the Officers' plate

In 1870, the following successes were scored at the Meeting:—

Officers Prize, 200 and 500 yards—	Captain H. R. Elliot	1st
	Lieut H. M. Dale	2nd
	Captain F. H. Mathias	3rd
Ladies' Prize, 100 and 200 yards—	Lieut. A. F. Hamilton	2nd
Revolver Prize	Captain F. H. Mathias	1st
Sportsmen's contest	Lieut. A. F. Hamilton	1st

In 1876, the Corps scored the following:—

Army pistol stakes	Captain A. F. Hamilton	1st
Officers' Plate	Captain A. F. Hamilton	2nd
Independent Firing N.T. 300 yards	Corps team	1st
Native Derby, 100 yards	Sapper Madurai	1st

1869. **Arms.**—The allotment of carbines per company of Sappers and Miners was increased to 117, under P.M.G. of 18-10-1869, to admit of the Havildars being armed with carbines, in lieu of swords.

1870. **Musketry.**—G.O.C.C. 93 of 12-8-1870, gives the first published results of the musketry course of the Corps. This order shews that the Corps then carried out the same course as laid down for Infantry, and that it consisted of:—

Individual firing up to 250 yards.

Volley " " 200 "

Independent firing, and skirmishing.

Dress.—Hawkes and Co. pattern of cork helmet was introduced for officers of the Corps, for both full and undress; the pattern to be the same as that for Infantry, and the colour of the turban for R.E. officers to be Garter Blue. G.O.C.C. 239 and 243 of 1870.

1871. **Instruction.**—The rules laid down in 1849 for the instruction of officers of Infantry appointed to do duty with the Sappers and Miners were altered under G.O.C.C. 70 of 26-6-1871, to read:—

(2) Six months after joining the H.Q. of the Corps, every officer will be required to pass a satisfactory examination in vulgar and decimal fractions, the use of logarithms, practical geometry, mensuration, plain trigonometry, army signalling, use of the prismatic compass and chain, box sextant, theodolite, and levelling instruments, including adjustment of instruments; and to be competent to survey with the chain only, with the theodolite and chain, and with the prismatic compass and chain; also to survey and take sections with the Y level, and with Troughton and Simm's level, including in every case keeping Field books, plotting, and finishing the drawing, and to be able to make a route sketch or reconnaissance of any portion of the country, or of a military position, and to represent with facility and accuracy the features of the ground either with pen and ink, pencil, or brush.

(3) Fourteen months after joining he will be required to shew a well finished plan of a front of a system of fortification, drawn by himself. His knowledge of Field Fortification, of Vauban's first system, and of the book of instruction in Military Engineering, will be tested by examination partly practical, and partly on paper. 1871.

Arms.—The Corps was re-armed with Enfield rifles in 1871.

Dress.—Blue serge working jackets were sanctioned for the Corps in March 1871.

Musketry.—Under G.O.C.C. 52 of 10-6-1872, the same allowance of ammunition was sanctioned for the Sappers and Miners as for Native Infantry, viz: 1872.

Officers below Field Rank,	60 rounds ball	
B.N.C.O.s' (G.O.C.C. 77 of 1872)	90	"
Trained Soldiers	90	" and 100 blank.

For match shooting, 10 rounds per B.N.C.O. and 6 rounds per Native N.C.O. or Sapper.

Equipment.—Four maunds (1 bullock cart) was sanctioned under G.O.C.C. 689 of 27-6-1872, for the carriage of hospital equipment on the march for a Sapper company; previous to this date one hospital tent, two doolies with bearers, and one cooly to carry medicines only, had been authorised.

Instruction.—In 1872 army signalling was still considered a highly technical work, and courses of instruction in army signalling and telegraphy were carried out at the H.Q. of the Corps, the Commandant being authorised by G.O.C.C. India, 173 of 5th July 1872 to grant to such officers as had passed through the prescribed course, certificates of proficiency in army signalling, and in the construction and working of a Field Telegraph.

Musketry.—The results of the 1872-73 musketry course in the Madras army are given in G.O.C.C. dated 11th August 1873, and shew the Corps as having Marksmen Nil, 1st Class 81 %, 2nd Class 40 %, and 3rd Class 59 %; but the course must have been very stiff judging by the results of the 14 units published, as the average percentage of Marksmen was only 48 and the average percentage of 3rd Class shots was 63. The course at that time consisted of:— 1873.

Individual firing from 150 to 600 yards.

Volleys at 400 yards.

Independent firing at 300 yards.

Skirmishing from 400 to 200 yards.

Rank and Pay of R.E. N.C.O.s—G.O.C.C. India, 125 of 10-4-1873. Extract from a military letter from His Grace the Duke of Argyle, K.T. Her Majesty's Secretary of State for India, No. 12 dated 23rd January 1873.

Para. 7. I forward herewith copy of a letter from the Horse Guards, dated 27th December 1872, stating that H.R.H. the Field Marshal Commanding-in-Chief sees no objection to the proposition of your Government, that the rank of men promoted in the Sappers and Miners should be acting rank, but should carry with it the full pay of the respective grades.

Copy of letter from Horse Guards No. 105 E-54, dated War Office 27th December 1872.

In reply to your letter of the 23rd instant No. 719 H, and previous correspondence on the subject of men of the Royal Engineers having acting rank only in the Sappers and Miners in India, I am desired by H.R.H. the Field Marshal Commanding-in-Chief to inform

1873. you that he sees no objection to the proposition of the Government of India, as all men of that Corps sent to that country hold the rank of N.C.O.s, and receive substantive promotion up to and including that of Sergeant, and on remand to Imperial duty would therefore return to the rank they may have been regularly promoted to, unless they have been reduced to the Ranks, in which case they would return as Sappers.

Chargers.—P.M.G. dated 20th December 1873.—“The Right Honourable the Governor-in-Council is pleased to sanction the adoption in this Presidency of the arrangement authorised in Bengal, requiring officers of the Corps of Sappers and Miners to keep chargers for inspection duty, in lieu of palankeens.”

1874. **Musketry.**—In the musketry course for 1873-74, the Corps results were:—

Marksmen	6%
1st Class	5%
2nd „	47%
3rd „	48%

This would appear to be poor, but the Corps was placed 8th out of the 22 units whose shooting was published in G.O.C.C.

Duffla Expedition.—In October 1874 a force of about 1000 men was detailed under Brigadier-General Stafford, C.B., to recover some Assamese whom the Dufflas had carried off as prisoners. Captain Begbie of the Madras Sappers and Miners was selected as signalling officer of the expedition and he received the following telegram “Lord Napier selected you for employment Duffla Expedition.” On 9th November he sailed with two men and signalling equipment for Calcutta, expecting to find a signalling establishment with the force. From Calcutta he proceeded up the Brahmaputra and joined the force at Borgain on 12th December, when he found that there were no signallers with the force, and the General had expected him to bring a complete signalling section. However, with the aid of two volunteers he was able to work four signal stations, and proved the utility of visual signalling which was then in its infancy. The operations were uneventful, and came to an end on 23rd February 1875.

1875. **R.E. N.C.O.s'**—The designation of Company Sergeant-Major was introduced under G.G.O. Military Department No. 41 of 12th January 1875, to replace that of Colour-Sergeant, in a Sapper and Miner Company.

Honours.—Extract from the *London Gazette* dated 29th May, 1875:—

The Queen has been graciously pleased on the occasion of the celebration of Her Majesty's birthday, to give orders for the following appointments to the Most Honourable Order of the Bath.

To be Ordinary Members of the Military Division of the 3rd Class, or Companions of the said Most Honourable Order:—

Lieut.-Colonel Harry North Dalrymple Prendergast, V.C., Royal (late Madras) Engineers.

Arms.—The Corps was re-armed with Snider carbines in 1875.

Campaign in Perak, 1875-76.—“C” Company under the command of Lieut. A. Howlett, M.S.C., with Lieut. H. B. Rich, R.E., temporarily attached, left Rangoon on the 22nd November 1875, and reached Penang on 29th. During December the company was engaged in erecting huts and stockades, and in January in road work, a party of Malays on one occasion advancing to within 15 yards of the party working on the road, and wounding a Havildar, before they were driven off by the covering party. The company was present at the assault on

Kota Lama on 28th January, and embarked to return to Madras on 22nd March. The excellent service rendered by the company is recorded in the Proceedings of the Madras Government, Military Department, dated 22nd November 1876, from which the following are extracts :—

Field operations—Straits Settlements.

Read the following papers :—

No. 412. From Colonel H. K. BURNE, c.B.,

*Secretary to the Government of India,
Military Department,*

To Colonel J. MICHAEL, c.S.I.,

*Secretary to Government, Military Department,
Fort St. George.*

* * * *

I am directed to forward, for the information of His Grace the Governor in Council, a copy of the communication noted below, relative to the services of the C Company (Queen's Own) Sappers and Miners during the recent operations in the Malay Peninsula, and to remark that the Government of India have great pleasure in forwarding this favourable report.

* * * *

From

Captain E. F. CHAPMAN, for Quartermaster-General in India

To

Colonel H. K. BURNE, c.B.,

*Secretary to the Government of India,
Military Department.*

No. 8068,

21st October 1876.

* * I am directed by His Excellency the Commander-in-Chief to submit for the information of the Government of India the accompanying copy of a letter received from the Brigadier-General Commanding the late Larut Field Force, bringing to notice the excellent service rendered by the company of the Madras Sappers and Miners under Lieutenant Howlett, Madras Staff Corps, throughout the expedition.

2. In the Commander-in-Chief's opinion the services performed by the company of Sappers and Miners were of great value, reflecting credit both on officers and men, and His Excellency thinks that the report submitted by Brigadier-General Ross might be forwarded to the Government of Madras with a suitable acknowledgment.

Copy of a letter from Brigadier-General J. Ross, c.B., Commanding Presidency District, late Larut Field Force, to the Quartermaster-General in India, dated 3rd October 1876.

I have the honour to submit the accompanying letter from Major J. T. Twigge, R.E., senior officer of that Corps, who accompanied the Bengal Troops under my command to Perak, and I would request the goodness of your moving His Excellency the Commander-in-Chief to submit the same for the information of the Government of Madras.

I can endorse all that Major Twigge says of the excellent service performed by Lieutenant Howlett and the company of Madras Sappers, and annex an extract of my letter to Major-General Sir Francis Colborne, K.C.B., regarding them.

On my arrival in Larut I found that the opening of the road to Quala Kangsa, and preparation of accommodation there, was in abeyance, as labourers refused to work in so advanced a position without the support of troops.

The date of Major Twigge's letter will account for the delay in specially bringing the services of the Sappers to the notice of Government, and I regret that it should have occurred.

From Major Twigge, R.E., to Brigadier-General J. Ross, C.B., Commanding Presidency District, dated Simla, 13th September 1875.

The official account of the late operations in the Malayan Peninsula having now been published, and finding that no mention has been made of the important service rendered by the company of Madras Sappers who formed a part of the force, as they were employed under my immediate direction, I venture to submit the following for your consideration with a view that if not too late, the value of their services to the well-being of the troops and success of the expedition might receive some acknowledgment. I have to express my regret that I omitted to bring the matter to your notice sooner.

2. The company landed with the first portion of the force under the command of Colonel Cox, 3rd Buffs, and were employed, until the arrival of the main body, at Gapis and Company Boyale; the former place they stockaded in a few days, so as to make it tenable by a small detachment, and did much to render the latter habitable by the troops.

It having been found impossible to send forward tents, &c., &c., owing to the insufficiency of transport provided by the Colonial Government, the Sappers were, on the 8th December, sent in advance of the troops to Quala Kangsa to erect hutting. By the exertion of these men, aided by some ten Chinese workmen, hut accommodation was provided as fast as the troops could be moved forward. Transport was economised and left available for other purposes, and considerable saving to Government effected; it also enabled the men to construct beds or platforms raised from the ground, the importance of which to their health in a climate like that of the Straits cannot be overrated; had it been necessary to use tents this would have been impossible; the provision of hospital accommodation, cover for the Commissariat stores, &c., &c., were of immense convenience to the troops. The Sappers, while employed on the above, were at work from sunrise until sunset in all weathers; to show the amount of work done, I need only say, that over 11,000 superficial feet of hutting was erected between the 8th December and the end of the month. Considering the climate, and the difficulties which had to be contended with in the nature of the work, and the use of materials to which the men were unaccustomed, I venture to submit that they were deserving of especial praise for the readiness of resource they displayed.

3. In addition to the above, the position was enclosed by palisading, bridges built, and communication to the rear improved; a road was opened to Kotah Lamah, and many minor services conducive to the health and comfort of the troops performed.

Extract of a letter from Brigadier-General Ross, C.B., to Major-General Sir Francis Colborne, K.C.B., Commanding in China.

"In conclusion, I would solicit your Excellency's commendation for the very excellent work performed by the Madras Sappers under the command of Lieutenant A. Howlett, working eight and nine hours a day; they were ever willing and cheerful, and proved themselves in every way to be right good and valuable soldiers."

Order thereon, 22nd November 1876. His Grace the Governor in Council has much pleasure in forwarding to His Excellency the Commander-in-Chief the above record of the good service performed by Lieutenant Howlett and the "C" Company (Queen's Own) Sappers and Miners in the Malay Peninsula. 1876.

Honours and Distinction.—G.O.G. No. 266, dated Fort William, the 10th March, 1876.

The Viceroy and Governor-General in Council has the highest gratification in announcing that in commemoration of the visit to India of Field Marshal His Royal Highness the Prince of Wales, the Queen has been graciously pleased to appoint His Royal Highness to be Honorary Colonel of the following Regiments:—

* * * *

The Corps of Madras Sappers and Miners.

* * * *

Her Majesty has been further graciously pleased to confer on the following Corps the distinction of being styled "Queen's Own," and of wearing on their Colours and Appointments the Royal Cypher within the Garter:—

* * * *

The Corps of Madras Sappers and Miners.

* * * *

Equipment.—C.O. dated 24-11-1876. Tools will be carried as follows:—

	Axes felling.	Axes pick.	Mamooties.	Crowbars.
1st Section	5	14	7	1
2nd "	5	13	7	1
3rd "	5	13	7	1
4th "	5	13	7	1

53 working knives to be carried by the front rank, and 52 hand axes by the rear rank.

Extracts from the Madras Army Regulation of 1876.—

992. The Head-Quarters of the Sappers and Miners are stationed at Bangalore. Three companies, exclusive of recruits, will be at Head-Quarters for instruction in all such branches of military and civil engineering as may be deemed requisite to render them conversant with all duties which they may be called upon to perform in garrison or in the Field. One of these companies is to be relieved every year, so that the whole Corps may pass through its course of instruction at regular intervals.

993. The remaining companies are to be employed upon such public works, civil or military, as may be ordered by Government on the recommendation of the Secretary to Government, Department Public Works.

994. Except in cases of emergency, and with the previous sanction of the Commander-in-Chief, no party under the strength of a complete company is ever to be employed on detached duty extending beyond the period of one month; and, under no circumstances is any party to be detached under the strength of a complete section.

995. Excepting only for Field service, no detachments of any kind are to be made from the Head-Quarters of the Corps, unless when there may be parties available in excess of the three companies under instruction.

996. Each company to be complete in itself and prepared for the performance of every duty for which it may be required, independently of the Head-Quarters of the Corps.

* * * *

998. The Corps stands in the same relation to the Commander-in-Chief and different military authorities, as a regiment of the line.

1000. When employed in the Field, the officer at the head of the Quartermaster-General's Department will communicate with the officer commanding the Sappers regarding work properly appertaining to the duty of Pioneers, and the latter will adopt the means at his disposal to attain the object required.

1001. On Field service the packs are carried at the public expense.

1008. Officers of Infantry appointed to do duty with the Corps of Sappers are to be considered regimental officers equally with the officers of Engineers, with whom they will take rank according to the dates of their commissions in the Army—with the exception that they will not have any claim to the command of the Corps, which, in the absence of the permanent commanding officer, will devolve upon such one of the officers with the Corps as the Commander-in-Chief may specially appoint.

1009. No Engineer or other officer who may casually fall into the charge of, or be appointed to do duty with, any portion of the Corps on Field service or other occasion, shall have any claim to the command of the Corps, though senior to the permanent commanding officer, who will remain in undisturbed possession of all his rights and privileges as commanding officer.

1111. No officer shall be eligible for appointment to do duty with the Sappers and Miners, who is not, in every respect, qualified to command a company in his own regiment;—nor should any offer himself as a candidate unless he has both talent and taste for Engineer duties, a determination to study, and a fair knowledge of mathematics and military drawing.

1012. No infantry officer will be appointed to the Sappers and Miners, until he has passed an examination, before the Commandant of the Corps, in arithmetic and geometry. In arithmetic the examination will extend to vulgar and decimal fractions, practice, and compound proportion, and in geometry to the first three books in Euclid.

1013. Six months after joining the Head-Quarters of the Corps, every officer will be required to pass a satisfactory examination in vulgar and decimal fractions, the use of logarithms, practical geometry, mensuration, plane trigonometry, army signalling, use of the prismatic compass, and chain box sextant, theodolite and levelling instruments, including adjustment of instruments, and to be competent to survey with the chain only, with the theodolite and chain, and with the prismatic compass and chain; also to survey and take sections with the Y level and with Troughton and Sim's level, including in every case keeping field books, plotting, and finishing the drawing, and to be able to make a route sketch or reconnaissance of any portion of the country, or of a military position, and to represent with facility and accuracy the features of the ground either with pen and ink, pencil, or brush.

Fourteen months after joining he will be required to show a well-finished plan of a front of a system of fortification, drawn by himself. His knowledge of field fortification, of Vauban's first system, and of the book of instruction in Military Engineering, will be tested by examination partly practical and partly on paper.

1014. An officer unable to pass satisfactory examination at either of the appointed periods, will be remanded his own regiment.

1020. Officers in charge of public works, having parties of Sappers 1876.
commanded by a European officer employed under their orders, are prohibited from interfering with the interior economy of such parties. Their attention is to be confined to the right employment of the men with reference to the work, while the duty of detaching the parties available for employment rests with the regimental officer.

1021. The permanent Commandant and Adjutant are nominated to Government by His Excellency the Commander-in-Chief.

Pay and Allowances.—G.G.O. No. 1 dated 1st January 1877. 1877.
The Viceroy and Governor-General of India in Council has much gratification in announcing to the Native armies in India that, with a view to the improvement of the conditions of the Native Commissioned and Non-Commissioned Officers and Men, serving in the armies of the three Presidencies and the Punjab Frontier Force, the following measures, recommended by the Government of India, have received the sanction of Her Majesty's Government:—

- I. A grant of Rs. 30 will be made to every recruit of x x x and Sappers and Miners, x x x on enlistment, to aid in the provision of the established kit.
- II. An annual allowance of Rs. 4 will be given to every N.C.O., Drummer, and Private of x x x and Sappers and Miners, x x x in aid of half-mounting. This will not be given to soldiers of less service than 18 months.
- III. G.C. pay at the rate of one, two, or three rupees monthly, will be granted in future as follows, viz: to the x x x and Sappers and Miners, after a service of 3, 9, and 15 years instead of one and two rupees after 6 and 10 years as at present.
- IV. Increased pay will be given to Native Commissioned Officers at the following rates, which include cantonment batta, viz:

SAPPERS AND MINERS.

Subadars	one half	Rs. 100 per mensem	
"	"	Rs. 80	"
Jemadars	"	Rs. 50	"
"	"	Rs. 40	"

The allowance to all Subadar-Majors will be increased from Rs. 25 to Rs. 50 per mensem.

V. x x x x

The several indulgences thus granted to the Native armies in India will have effect from the date on which Her Majesty's gracious assumption of the style and title of Empress of India is proclaimed to Her Majesty's subjects in this Empire, viz: from 1st January 1877.

Establishment, Distribution, Dress, Arms, etc.—In 1877, the Commandant and Adjutant were selected from the R.E., the other officers being either taken from the R.E. or from the Line.

The establishment was as follows:—

1 Colonel, Commandant.	6 Captains.
2 Majors.	12 Lieutenants,
1 Captain and Adjutant.	} Included above.
1 " Quartermaster.	
1 Surgeon-Major.	

1877.

1 Conductor.
 1 Sergeant-Major.
 1 Quartermaster-Sergeant.
 20 Sergeants.
 20 1st Corporals.
 20 2nd " "
 1 Assistant Apothecary.
 1 2nd Dresser.
 10 Subadars.
 10 Jemadars.
 1 Havildar-Major.
 40 Havildars.
 1 Honorary Havildar.
 80 Naicks.
 20 Buglers.
 1,050 Privates.

24 Recruit Boys.
 24 Pension Boys.
 10 Regimental Lascars.
 11 Pakhalis.
 1 Bhisti.
 1 Bricklayer Maistry.
 1 Stone-cutter.
 1 Cooper.
 1 Armourer.
 10 Carpenters.
 10 Smiths.
 10 Hammermen.
 10 Bellows Boys.
 1 Chowdry.
 2 Peons.
 1 Chuckler.

The number of Pension Boys was increased to 32 under S.G.O. 116 of 6th July 1877.

The Corps was divided into 10 companies, five of which were stationed with the Head-Quarters at Bangalore, three at Secunderabad, one on the Nilgiri Hills, and one at Rangoon.

There was also a Depot company extra to the establishment, which was stationed at Bangalore, and consisted of 2 Havildars, 2 Naicks and 94 Privates.

The uniform consisted of a dark-blue turband, a scarlet tunic with garter blue facings, and dark-blue trousers with a red stripe. The ordinary working or fatigue dress was of dark-blue cotton cloth with a turban of the same.

The men were armed with the five-grooved muzzle loading Snider carbine, and carried their ammunition in two pouches made to slide on the waist belt.

In addition to their arms they carried tools as shewn on page 103

The rates of pay, batta and working allowance are given below. Full batta, which is only drawn by other Native troops when on service or on a march, is always drawn by the Sappers and Miners wherever they may be:—

Rank.		Pay.			Batta.			Working Pay.			Remarks.
		Rs.	A.	P.	Rs.	A.	P.	1st Cl. 2nd Cl. 3rd Cl.			The working pay is granted for a day's work of 8 hours. If the men have far to go the marching time is included in the working hours. Inferior workmen draw 3rd class pay. Those who pass certain tests draw 2nd class pay. Those who are very superior in their respective trades draw 1st class pay.
Subdr.	1st Class.	100	0	0	14	3	3	8 Annas a day irrespective of class.			
	2nd "	80	0	0							
Jendr.	1st Class.	50	0	0	7	8	0	6 Annas a day irrespective of class.			
	2nd "	40	0	0							
								Per Diem.			
Havildar ...		14	0	0	5	0	0	4 As.	3 As.	2 As.	
Naick ...		12	0	0	5	0	0	...	...	...
Bugler.	1st Class.	13	0	0	5	0	0	...	...	...
	2nd "	12	0	0				...	...	...
	3rd "	11	0	0				...	...	...
Private	1st Class.	9	0	0	1	8	0	...	...	...
	2nd "	8	0	0				...	...	...
	3rd "	7	0	0				...	...	...

Musketry.—In 1877-78, the annual musketry course for the Corps was changed, so as not to be the same as that carried out by infantry, and the results were not thereafter classified with

those of Infantry till 1908, when the allowance of ammunition and the course was made the same for Sappers as for Cavalry and Infantry. 1877.

At the S.I.R.A. Meeting, Captain A. F. Hamilton won the "Rifle Oaks, 500 yards."

Clothing.—The following were laid down as the free issues, under S.G.O. 190 of 26th November 1877:—

1st year and 3rd year—Blue serge frock and black cotton trousers (dyed drill).

2nd year—Cloth tunics and serge trousers.

4th year—Black cotton trousers.

Expedition to Malta and Cyprus, 1878.—On 12th April 1878, 1878. orders were received to prepare two companies and a small Park for service, and on 17th, a 3rd class siege train and company equipments for two companies, were ordered to be prepared at the Madras Arsenal.

The strength of the detachment sent was as follows:—

Col. H. N. D. Prendergast, V.C., Commanding

Captain A. F. Hamilton, Staff Officer

Surgeon W. A. Lee

Conductor T. Jones, in charge of Park.

"G" Company.

"H" Company.

Lieut. C. C. Ellis.

Lieut. C. B. Wilkieson.

" W. D. Lindley.

" W. D. Connor.

" S. C. N. Grant.

" F. W. T. Attree.

The Native officers with the two companies were:—

Subadar Antoni, Jemadars Kalimuttu, Rajahram, and Rajahlingam.

Colonel Prendergast reached Bombay on 25th April, as he was to command a Sapper Brigade comprising two Bombay companies as well as those of his own Corps. The Park arrived from Madras on 29th, it weighed about 107 tons, but its measurement tonnage was at least 400.

On 26th "G" and "H" Companies left Bangalore, and reaching Bombay on 30th, embarked that morning on the *Canara*, and sailed on 2nd May. The *Canara* tugged the *Baron Colonsay* which carried a part of the 1st Bombay Lancers, and passing Aden on the 11th, and Suez on the 19th, she entered the Marsa Muschetto Harbour of Malta on 26th. The companies disembarked on 27th, and occupied the Lazarette Barracks.

On 7th June, "G" Company marched to San Antonia camp to make roads and additional cover for the troops in camp.

On 12th, the Governor paraded the troops, and on the 17th all the troops in Malta were inspected by H.R.H. The Duke of Cambridge, whilst on 19th the Sapper Brigade was inspected by H.R.H.

The companies were employed in handling the Parks, (the store houses for which were changed) making roads, pumping water, and roofing tents, etc.

At noon on 10th July the Sapper Brigade, less half a company Bombay Sappers left in charge of the Bombay Park, was ordered to embark the same day in the *Canara*, and it sailed on the 11th for Cyprus, arriving off Larnaka at daybreak on 16th. The men were sent ashore in small detachments with the Park, and commenced work that day in constructing light landing stages for the disembarkation of troops that were expected to arrive the following week, the last of the Park was disembarked by noon on the 19th.

The Sappers also assisted the Royal Navy in the construction of a pier, under H.R.H. the Duke of Edinburgh.

Immediately on landing, Lieut. Lindley was employed on a rough survey of the site selected for a camp at Chiplik Pacha.

1878. The Sapper camp and park were situated in the courtyard of the Lazarette.

The road out to Chiplik was improved, and an alternative route opened up.

The Q. O. S. & M. formed part of the Guard of Honour when H.E. Sir Garnet Wolseley landed, on 22nd July, and Major Hamilton accompanied him on 24th and 25th to Famagousta and Limasole, when he reconnoitred there for camping sites and water supplies.

Lieut. Wilkieson was detailed to sketch and report on the road between Larnaka and Nikosia, and on 26th both companies moved out into camp outside Larnaka.

A line of visual signalling was started between Chiplik and the Sapper camp with heliostat, and from the Sappers to Marina by flag, but this line was later replaced by a wire worked by the 31st Company R.E.

Lieuts. Conner and Grant were sent to report on sites for winter huts, and shortly after, all the Sappers were employed on the road between Larnaka and Nikosia.

"H" Company moved to Peroi, (about 11 miles from Nikosia) on 12th August, dropping a section at Gosli, (8 miles from Larnaka), and "G" Company moved to Nikosia, leaving however $\frac{1}{2}$ section in charge of the Park at Marina.

Fever was very bad, and in the 2nd week of August the "G" Company could seldom muster more than 22 men on a working parade, whilst "H" Company suffered very severely also.

Col. Prendergast returned to India on 25th August.

A place called Mathiati was finally selected for the winter hatted camp, and this necessitated a change in the roadmaking operations; at the Larnaka end there was an entirely new trace for about $5\frac{1}{2}$ miles, whilst beyond that the road was improved, and diversions made where necessary.

Surgeon Lee was invalided home on 21st September, and Lieut. Jones had to take leave to Beyrout to get rid of his fever.

Lieut. Ellis was sent on 27th August to explore the S.E. slopes of Troodos.

About the beginning of September, "H" Company moved from Peroi to Haia Varvara, and in the middle of the month half of this company went to Mathiati to put up huts.

Local labourers were used a good deal under Sapper supervision on the road, as there were some 24 miles requiring work.

The huts began to arrive on 23rd September, and "G" Company was employed for 12 hours daily on the beach in disembarking and loading them; this work was very heavy, and Captain Marryat who was in charge at first was knocked up, Lieut. Ellis succeeded him but on 8th October had to go to Beyrout to recruit his health, and the work was completed by Lieut. Lindley.

On 8th October Lieut. Attreewas sent out to make a survey for a road between Limasole and Larnaka, whilst Jemadar Rajahlingam was employed on survey work all the time the Sappers were in Cyprus.

"H" Company reached Larnaka from Haia Varvara on 29th October, and the two companies embarked on the *Simoon* on 1st November, and sailed for Bombay on the 2nd, reaching that place on 20th.

They disembarked on 22nd, and leaving Bombay on 23rd, arrived at Bangalore on 29th. The siege train had been handed over to the C.R.E. Cyprus.

The casualties in the two companies between 26th April 1878, and 20th November 1878 were :—

Died— 2 B.N.C.O.s, 2 Native Ranks, 1 Public Foll. 1878.
 Invalided from Malta— 1 B.N.C.O. 4
 Invalided from Cyprus— 1 Medical Officer "

To the O.C. Royal Engineers, Cyprus.

H.E. approves of Colonel Prendergast proceeding to India to resume his duties there, and desires that you will inform him of Sir G. Wolseley's appreciation of the excellent work done by himself, and the officers and men under his command in this Island.

Monastery Camp,
 19th August 1878.

By order,

G. H. GRAVES,

Chief of Staff.

General Orders by His Excellency the Commander-in-Chief, dated Head-Quarters Madras, 28th February 1879.

His Excellency the Commander-in-Chief has much satisfaction in publishing to the Army, the following extract from the General Orders of the Lieut.-General in Command of the Forces, Cyprus, bearing testimony to the valuable services rendered by the "G" and "H" Companies of the Madras (Queen's Own) Sappers and Miners, during their stay in Cyprus:—

"By their exemplary conduct and good work, these companies have well maintained the high reputation of the distinguished Corps to which they belong."

Extract from General Orders, dated Monastery Camp, Nicosia, 31st October 1878.

* * * *

"3 The Madras and Bombay Sappers and Miners being about to embark for India, the Lieut.-General cannot allow them to leave the Command without placing upon record his sense of the valuable work they have done in this Island. He will not fail to bring to the notice of the Government of India his appreciation of the services they have rendered."

By order of His Excellency the Commader-in-Chief,

F. JEBB, Brigadier-General,

Adjt.-General.

Brigade Orders by Brigadier-General Macpherson, C.B., V.C., dated 28th August 1878, S.S. *Osyth* Suez Roads.

1. In taking leave of the troops marginally noted that have been under his Command at Malta and Cyprus, Detachment Madras and Bombay Sappers and Miners. Brig.-Genl. Macpherson offers to all ranks his very best thanks for the admirable discipline that has been maintained throughout the expedition, under circumstances of no ordinary temptation. The highest authority in the army has represented to Her Most Gracious Majesty his high appreciation of their soldierlike bearing, in terms of which every individual of the Indian Contingent must feel justly proud.

By order,

J. WATTS, MAJOR,

Brigade Major.

Musketry.—At the S.I.R.A. Meeting, the Corps was 2nd out of 10 teams for the Cubbon Cup, and N.C.O.s took both 1st and 2nd prizes in the Native Derby at 200 yards.

Second War Afganistan, 1878-80.—First Campaign, 1878-79, "B" and "E" Companies left Bangalore on 5th December 1878, and were followed by "K" Company a fortnight later.

The Officers engaged were:—

Major C. A. Sim, R.E., Commanding.

Surgeon Sibthorpe, in medical charge.

"B" Company.

Lieut. W. D. Conner, R.E.
 " F. W. T. Attree, R.E.
 " R. A. Wahab, R.E.

"E" Company.

Capt. F. H. Winterbotham, M.I. (died.)
 Lieut. W. D. Lindley, R.E.
 " A. C. MacDonnel, R.E.

"K" Company.

Lieut. C. C. Rawson, R.E.
 " P. B. Poulter, R.E.
 " R. E. Hamilton, R.E.

"B" and "E" Companies reached Jamrud on 9th January, and "K" Company arrived there on 23rd. They were employed at once on a defensive post at Shargai, two miles from Ali Masjid, and on the road from Jamrud to Ali Masjid; this road was wide enough for convoys of camels to pass by February, and was opened for cart traffic on 17th March. Two officers and 50 men of "B" Company accompanied the column of 900 men which left Ali Masjid on 25th January for the Bazar Valley, towers were destroyed at Karumna and Burg, and 50 men of "E" Company joined the detachment of "B" Company at Burg, and China was reached on the evening of 26th. On 28th the Sappers accompanied a reconnoitring party that went out four miles, and on 29th they were employed blowing up towers near camp. The column left the Bazar Valley on 3rd February, and reached Ali Masjid on the 4th, and "E" Company remained there with "B." From the 26th February to the 1st March, Lieut. Wahab with a Jemadar and two Sappers proceeded with a party to reconnoitre for a suitable encampment in the surrounding hills, for the hot weather. On 12th March 1 officer and 50 men of "B" Company moved towards Jamrud to meet the Elephant Battery, and had very heavy work hauling the store and ammunition wagons up. On 18th March "K" Company moved to Dakka, and next day to Basawal. This company put up a signboard at the road junction between Landi Kotal and Landi Khana, with three arms, one shewed the road to Kabul, one the road to Landi Kotal, and the third which marked the road to Peshawar was endorsed "to Madras." On 26th March "K" Company moved to Jellalabad, and was brigaded there with the Bengal Sappers. At the end of the month, this company marched with the advanced brigade under General Gough, and reached Fattihabad on 1st April, it was with the reserve during the action at Fattihabad. On 27th March "B" Company moved to Landi Kotal.

Up to the 12th April "K" Company was at work on the road from Fattihabad towards Gandamak and Jellalabad, after which they moved to Nimlah and on 14th to Gandamak, where they remained till the close of the campaign, detaching parties under Lieuts. Poulter and Rawson for the construction of forts Rozabad and Battye respectively, between Jellalabad and Gandamak. Two N.O.s and 20 Sappers accompanied Lieut. Bartram of the Bengal Sappers to the hill about five miles from Gandamak on the Kabul side, where the 44th Regiment made its last stand in the 1st Afghan war, to build a monument; they returned on a raft from Jellalabad and rejoined the company at Dakka on 5th June, having been fired at *en route* by the Mohmands. In the middle of April "E" Company moved to Basawal, and on 29th idem "B" Company marched to Landi Khana; the next day they commenced work on a defensive post at Torkumar half way between Landi Khana and Dakka. Work on this post was continually interrupted by parties of the Zakka Khel, and the company was engaged in the action at Fattihabad on 2nd April, and in affairs on 10th, 11th, and 14th May. The work at Torkumar

was completed on 22nd May, and on 25th "B" company returned to Landi Kotal, leaving a small party at Torkumar. Owing to a bad outbreak of cholera, one British regiment was sent back to Peshawar, and the Sappers had to furnish piquets amounting to 36 men. Three Sappers died of cholera. "K" company left Gandamak on 31st May, and joined the other 2 companies en route, and all 3 companies reached Jhelum on 4th July and Bangalore on 29th idem, after a ten days segregation at Kistnaveram on account of cholera. The companies left Bangalore with 11 British officers, 7 Native officers, 370 N.C.O.s and men, and 184 followers, and of these Captain Winterbotham and Lieut. Poulter had died at Peshawar on 14th February and 22nd June respectively, whilst 1 Native officer died on 10th July, and 27 N.C.O.s and men and 11 followers had died or been invalided.

Major C. A. Sim received a Brevet Lieut. Colonelcy.

Lieut.-General Maude reported in his despatches.

"Major Sim, R.E., Madras Sappers and Miners is a good practical hard-working officer. Both he and his two ("B" and "E") companies did excellent services."

Lieut.-General Sir S. Browne, K.C.S.I., C.B., reported:—

"With regard to the "K" company Madras Sappers under Lieut. Rawson which joined the 1st Division before leaving Jellalabad, I have to record my satisfaction of their conduct."

The force received the thanks of Parliament. (G.O. October 31st 1879).

Second Campaign, 1879-80.—"A" company left Bangalore on 3rd October 1879, and reached Landi Kotal on 14th November; "I" company left Bangalore on 5th October, and arrived at Jellalabad on 19th November, the "C" company which was at Rangoon left that place on 16th November, and reached Landi Kotal on 25th December. The officers were:—

Major Ross Thompson, commanding

Surgeon J. Thornhill, in medical charge.

"A" Company	"C" Company	"I" Company
Lieut. C. H. Darling	Lieut. A. R. F. Dorward	Lieut. A. G. Dobson (died)
" W. D. Lindley	" L. Langley	" C. B. Henderson
" R. A. Wahab.	" G. E. Shute.	" T. Digby.

Major Ross Thompson was at Rangoon when he received his orders and he sailed with Lieut. Dobson on 5th October, leaving Lieut. Dorward to bring on "C" company; he overtook "A" and "I" companies at Mian Mir, and assumed command. On arrival at Landi Kotal "A" company was employed on defensive works, etc., and in December moved to Basaval to complete the defences there. "I" company constructed a bridge over the Kabul river and improved the defences of Fort Sale at Jellalabad; on 29th December this company moved with the Bandha expedition against some Afghan raiders beyond Barikot. On 15th January a detachment of "C" company with Lieuts. Dorward and Shute, was engaged with the force under General Doran which moved from Landi Kotal to endeavour to get in rear of some 5000 Mohmands who had crossed the river and threatened Dakka; on 17th the Sappers formed rafts from skins that had been floated down from Jellalabad, and during the day 600 men and the Sappers crossed and occupied the village of Rena, early on 18th the village was destroyed. Orders were then received for the Sappers to return at once to Kam Dakka to rejoin General Doran who was returning to Landi Kotal, the Sappers reached Kam Dakka about 1 p.m. but the force had already marched, and no one had been left to guide the Sappers, with

1880.

1880. the result that after marching for several hours they failed to find the trail of the force, and returned to Dakka late that night. They moved next day to Landi Kotal.

On 21st January "A" company took part in an expedition against Batekot, and a little later joined "I" company who had moved to the Daranta Gorge to make a road over the Siah Koh range into the Laghman Valley; and before the end of the month, "C" company advanced to Jellalabad, half the company to push on with the bridge over the river, whilst the other half moved to the Daranta Gorge to take up the work commenced by "A" and "I" companies, who had joined the First Laghman Expedition under General Bright on 23th January, no opposition was encountered by this force, and they reached the fort of Badiabad, where the English captives had been imprisoned in 1842, returning thence to Fort Asmatullah Khan. "C" and "I" companies then returned to Jellalabad to make the new Girdikas river road from Basawal to Jellalabad to avoid Barikab, but Major Ross Thompson with "A" company remained with General Bright. Major Ross Thompson was then despatched to reconnoitre the route through Adrak Badrak Pass between Jellalabad and Kata Sang on the way to Kabul, the escort consisting of 400 infantry and "A" company Sappers, they improved the road for 20 miles, finding an easy line, and after having had some slight skirmishing with the enemy, they passed out of the Adrak Badrak country by a defile that brought them to Jagdalak. The following is extracted from Orders of the 10th March, by Major-General Bright, c.B., Commanding the Khaibar Division:—

"The Major-General Commanding desires to place on record his appreciation of the services rendered by the officers and men concerned in the construction of the road over the Siah Koh range at Daranta for the passage of the Jellalabad Moveable Column into the Laghman Valley. The work was carried out by the "A" "C" and "I" companies Queen's Own Sappers and Miners, under the command of Major Ross Thompson, R.E., assisted by working parties from H.M.'s 12th and 25th Foot, and the 27th and 31st B.N.I. Work was commenced on 24th January, and on the 28th the Infantry and mountain guns of the force passed safely into the Laghman Valley. As the work was one of unusual difficulty and magnitude, the Major-General considers the rapidity and skill with which it was carried out reflects great credit on Col. Limond and the officers and men working under his orders."

During March and April, "C" and "I" companies were employed on the river road from Jellalabad to Basawal, "C" company having marched on 20th February to Ali Boghan, whilst "I" company moved to Lachipur; this road was 10' wide throughout, and ready for traffic by 1st May, by which time also the fort at Ali Boghan was nearly finished, and the buildings had been commenced.

Colonel Limond reported to the General that "The Madras Sappers have done splendid work."

"A" company had meanwhile remained with Major Ross Thompson at Gandamak, and took part in the Waziri expedition from 4th April to 7th, and also in the Hissarak expedition from 11th idem to 17th. Major Ross Thompson and Lieutenants Darling, Lindley, and Henderson, accompanied the force which had a good deal of loose fighting. In May, "I" company moved to Rozabad, "C" company remaining to complete the road and the fort at Lachipur.

Before "I" company moved, a detachment of it under Lieut. Digby was on the Besud expedition not far from Jellalabad, which started on 19th May. 1880.

During May the thermometer in the huts at Ali Boghan stood daily between 112 and 114, and at night the temperature seldom fell below 100; up to this time the Sappers had been wonderfully healthy, but now the constant work and exposure to the sun began to tell on them, and at the end of May, about 10% were in hospital, and another 5% were only fit for light work.

On 3rd and 4th June, Lieuts. Dorward and Langley with 60 men of "C" company were employed in making rafts, and taking troops across the river for the Kama expedition against the Mohmands; towers were blown up and villages burnt, and the troops recrossed the river on the 6th and 7th, and the "C" company returned to Ali Boghan.

General Doran in his despatches said:—

"The exposure to the heat involved in this duty was most severe. Both at the river and in the demolition of the forts on the 5th June, the "C" company Madras Sappers wrought hard and well."

In May Lieut. G. Henry was ordered from Bangalore to Afghanistan, and he proceeded to Jellalabad, and was there and at Rozabad till the close of the campaign.

On 3rd June Major Ross Thompson with "I" company accompanied Brigadier-General Arbuthnot, C.B., on the Second Laghman expedition, the force was out 12 days and had a very rough time of it. The temperature ran from 110 to 112 by day, with hot winds and dust storms by night; opposition was only met with on one day when the force was crossing the Kabul river on its return. Lieuts. Dobson and Digby were with the company, and destroyed about 12 towers and the same number of villages. The company returned to Rozabad, and Lieut. Dobson, who had been in bad health for some time, died there, whilst Lieut. Henderson had to take sick leave to Murree. On 17th June "I" company was ordered to Gandamak, and "C" company to Jellalabad. The Sappers were now employed in making rafts to convey the sick and stores from Jellalabad to Dakka as the troops were under orders to return to India; but as the Mohmands fired at the rafts from the left bank of the river a detachment of "C" company under Lieut. Dorward was rafted down the river to Sirdao opposite Lachipur, to form a defensive post on that bank of the river; but as soon as this had been prepared, the troops there were ordered back to Jellalabad, as it was decided not to leave a small force in an exposed position and cut off from support by the river. In his report, Major Shaw commanding the troops sent to Sirdao, brought prominently to notice "the excellent and hard work done by the Sappers".

In July the companies marched down to Peshawar, and from there they marched with 150 men of the 1st M.N.I. to Hassan Abdal, *via* the Kohat Pass; the whole party being under the command of Lieut. Dorward; Major Ross Thompson joined them at Hassan Abdal, and marching thence to Jhelum, they moved by rail to Bangalore. The Sappers were on the whole exceedingly healthy throughout the campaign, and were almost immune from pneumonia, from which the Bengal troops suffered a good deal. The campaign shewed that the Native soldier of Southern India can serve efficiently under conditions of climate not natural to him.

Honours and Distinctions.—The Corps received the Honour, "AFGHANISTAN, 1878-80." (G.G.O. 418 of 29th July 1881.)

1880.

Major Ross Thompson received a Brevet Lieut. Colonelcy.

The following are extracts from G.O.C.C. dated 12th November 1880. "The three companies of the Sappers and Miners, under the Command of Major Ross Thompson, R.E., have maintained the high character their Corps has always borne when employed on active service."

And G.O.C.C. 6th December 1880, "The services rendered by the Sappers have been highly commended by all Officers under whom they served."

The force received the thanks of Parliament.

1879.

Employment.—The following order was laid down under S.G.O. No. 88 of 22nd July 1879:—

When on field service, the Corps of Sappers and Miners is a distinct body, under command of its own officers appointed from the Corps of R.E.; Commanding Engineers in the field have no power to interfere in the interior economy of companies of Sappers, for which the officers of the Corps are alone responsible to its Commandant. When any work is required from the Sappers and Miners attached to a force, orders will be issued to the regimental officer in charge, by the O.C. the Division, Brigade, or Detachment, to which the Sappers and Miners are attached. The Engineer Department has no control over the Sappers, but the services of the Sappers as of other troops, can at any time be placed at the disposal of a Commanding or Field Engineer for the carrying out of any specific work, and whilst so employed the O.C. the Sappers would receive orders regarding such work direct from the Staff of the superior Engineer authority."

1880.

And in S.G.O. No. 2 of the 13th January 1880, it was added:—

When however the Sappers and Miners are nominated to form an Engineer Corps attached to a force with which there is an Engineer Park, and to which Engineer Officers are attached as Field and Assistant Field Engineers, and which may consist of bodies of Sappers from different armies, or of two or more companies from one army, they shall come, when not detached, immediately under the command of the Commanding Engineer, who in such position shall be assisted by an Adjutant of Engineers. Engineer officers with such Engineer Corps are available for all duties to which they may be detailed, but from seniority as Engineer Officers they cannot claim to supersede Engineer Sapper Officers in their special Regimental Sapper appointments."

1882.

But both the above orders were cancelled by S.G.O. 110 of 14th September 1882, and the following substituted:—

"When on Field Service, the Corps of Sappers and Miners, or any portion of it so employed, is under the direct orders of the C.R.E. of the force to which it is attached, but the officers of the Sappers and Miners will continue to be responsible for the interior economy of the companies under their command. Officers of R.E. attached to companies of Sappers and Miners with a force on Field Service, will be available for any duties to which they may be appointed by the C.R.E. whether such duty is of a kind, as surveying and so forth, to be undertaken in their capacity as Engineer Officers apart from their Sapper Corps, or ordinary duty to be performed with their companies."

1879.

Expedition to quell disturbances in Rumpa, 1879-80. "D" and "G" companies moved in July 1879, to Dowlaishwaram, via the Buckingham, Kistna, and Godaveri canals, and camped on the site formerly occupied by the H.Q. of the Corps. The officers were:—

Lieut.-Col. F. A. Howes in command.

1879.

"D" Company	"G" Company
Lieut. C. C. Rawson	Major A. F. Hamilton
" R. E. Hamilton	Lieut. C. C. Ellis
" R. A. Wahab.	" A. C. MacDonnell
	" W. A. Gale.

Lieut. Hamilton was sent with 60 men of "D" company above the gorge of the Godaveri to Wuddagudiam, to prevent rebels from crossing to the Nizam's territory; the men at Dowlaishwaram were employed as guards on board the steamers, Captain Rawson with the other half of "D" company moved to Chodaram, and Lieut. MacDonnell was sent with a party of "G" company further up the country. In October Captain Rawson's party was withdrawn, and Lieut. Gale was detached with some of "G" company to Yellaishwaram, where he was relieved in December by Lieut. Hamilton.

In February 1880 all the Sappers except a few signallers were withdrawn to Dowlaishwaram, but later "D" company was sent to improve the roads near Chodaram. This company returned to Bangalore in January 1881, and "G" company returned in the following July. During the stay of the companies in the Rumpa District, Lieut.-Col. Howes, and Lieuts. Hamilton and MacDonnell were invalided, whilst Lieut. Wahab and Gale were transferred to other employment, leaving Major Hamilton in command of the detachment, and one British officer only per company. The companies were favourably mentioned in General Buck's despatches.

Railway Accident.—On the early morning of 31st October 1879, the train in which Lieut. G. Henry, and half of "E" company were travelling to Madras, en route to Burma, derailed when running at about 30 miles an hour, near Chinnamapet; four carriages were telescoped, with the result that the half company lost Subadar Gregory, 15 men, the wife and 2 children of an R.E. N.C.O., and 1 follower killed, and had a large number wounded; there were only about 6 unwounded and clear to assist in rescuing the wounded from the debris, and it was not till 2 p.m., over 9 hours after the accident had occurred, that the last living man was extricated.

Mess.—It was laid down under G.O.G. 771 of 6-11-1879, that "The payment of donations to the Sappers' Mess at Bangalore, is no longer compulsory, except from such officers as are attached for duty to the Corps of Sappers and Miners, whether such officers belong to the R.E. of the British or late Indian Services, irrespective of locality of employment. Subscriptions by officers benefitting by the mess to be continued as before."

Musketry.—In the S.I.R.A. Meeting of 1880, the Corps won the Cubbon Cup, 200 and 500 yards; Naick Kalsapen making the highest individual score in all the teams.

Havildar Ramasami won the Victoria Plate, 200, 500, and 600 yards, The Prince of Wales' Plate at 200 yards, and the Native Championship, receiving therewith the S.I.R.A. and W.I.R.A. medals. 2nd-Corpl. Grimes won the Snider Plate, at 200 yards.

In the 1881 meeting, Major Hamilton won the Empress Plate, at 800, 900, and 1000 yards, and with it the N.R.A. medal. Sergeant Davis won the Consolation Stakes at 500 yards; and in the Ohdewala Stakes at 200 and 500 yards the Corps team was 2nd, losing by 1 point only.

1881. **Instruction.**—In 1881, Army signalling was still considered a Sapper speciality, as shewn by the following extract from the Madras Army regulations, as amended by S.G.O. 114 of 25th October 1881. "A school of Army signalling has been established at Bangalore since 1872. At this school officers and soldiers of the British and Indian Services are instructed in visual signalling. The instruction is carried on by a commissioned officer styled the 'Instructor in Army Signalling,' and by an N.C.O. styled the 'Assistant Instructor in Army Signalling.' The Instructor is attached to the H.Q. of the Queen's Own Sappers, and he conducts his duties under the orders of the Commandant of this Corps. Certificates are granted to all passing certain standards, these certificates are signed by the Instructor, and countersigned by the Commandant of Sappers."

This system was continued until 1888, when two Inspectors of Army signalling were appointed, and Central Schools were formed under I.A.C. 141 of 1888.

1882. **Egyptian War, 1882.**—Orders were received on 6th July 1882, for two companies to proceed on service, and the following were detailed:—

Major A. F. Hamilton, Commanding Detachment.

"A" Company.

"I" Company.

Lieut. C. H. Darling

Lieut. W. D. Lindley

" P. B. Baldwin

" H. E. Goodwyn.

" H. S. Andrews Speed.

Surgeon T. Hoey.

"I" company left Bangalore on 12th July, and landed at Suez on 8th August; the "A" company left Bangalore on 1st August, and landed at Suez on 23rd idem.

On 23rd September, a section of "E" company consisting of telegraphists, with instruments and cable for 10 miles, and with mule transport, joined at Suez, and this section proved of great utility during the attack on Tel-el-Kebir.

The following was the work etc. performed by the detachment:—

9th August—"I" company moved up to Lock station, where they were employed in making a defensive post, a flying bridge, etc., up to 19th.

16th—Lieut. Goodwyn and three men employed near Little Chalouf, were attacked by a strong party of the enemy, and had to abandon their boat. Half of "I" company went with two companies of B.I. to destroy any cover that the enemy might have prepared at Little Chalouf.

20th—One section accompanied a wing of the Seaforth Highlanders in the advance on Chalouf, and destroyed about 80 yards of railway.

21st to 26th—Repairing Freshwater Canal, work on camping ground, repairs to railway, and telegraph.

27th—Lieut. Darling with $\frac{1}{2}$ of "A" company moved to Ismailia by rail; detachment H.Q. and $\frac{1}{2}$ of "A" company moved by canal to Ismailia, which was not reached until 30th.

28th to 8th September—"A" company was employed on the railway, on landing stages, and in landing stores.

27th— $\frac{1}{2}$ of "I" company moved to Fayid, and worked on railway and telegraph there for two days, on 29th they moved to Serapeum, and entrenched the lock, on 30th they reached Nefiche, and on 31st Ismailia, and joined in the work being carried out by "A" company, till 8th.

The left $\frac{1}{2}$ of "I" company remained at Chalouf until 7th September when they rejoined their H.Q.

10th September, the companies moved to Tel-el-Mahuta, and reached Kassassin next day, where they were employed on the water supply, both that day and the next. 1882.

On 13th they marched at 2-15 a.m., Lieut. Goodwyn with one section of "I" company moved with the advanced guard, the remainder in rear of the Infantry. The telegraph section followed in rear, laying cable to keep up communication between Divisional H.Q. and the General in Chief. After the capture of Tel-el-Kebir, Lieut. Lindley was detached with $\frac{1}{2}$ of "I" company to level a parapet which had been built across the railway; the remainder of the Sappers marched to Zagazig, 26 miles, arriving at 6 p.m.

Lieut. Lindley's detachment and the telegraph section rejoined on the 14th and 15th respectively, and the Sappers remained at Zagazig till the 21st, doing various repairs to the railway. Lieut. Baldwin with the surveyors made a sketch of the battlefield at Tel-el-Kebir.

The two companies moved to Cairo by rail on 22nd, whilst the telegraph section marched to Ismailia.

The companies were inspected by H.R.H. the Duke of Connaught on 2nd October.

The telegraph section reached Ismailia on 25th, and was railed to Cairo on 26th.

On 8th October the detachment left Cairo by train and reaching Suez the next morning, embarked on the *Alleghany*, and sailed the same day. Bombay was reached on 25th idem, and Bangalore on 30th.

Subadar Jeyram and Naick Shaikh Ismail proceeded from Egypt to England, and were presented to Her Majesty the Queen.

G.G.O. 518 dated 23rd September 1882.

"The military operations in Egypt having been brought to a successful close by the British Forces under the command of General Sir Garnet Wolseley, G.C.B., G.C.M.G., the Most Honourable the Viceroy and Governor-General in Council desires to express the gratification of the Government of India, that the Indian Division of the Expeditionary Force has taken an honourable and important part in these operations, and has fully maintained the reputation of the Indian Army."

Extract from despatch by Sir Garnet Wolseley:—

"I have great pleasure in bringing to the notice of your Excellency, the effective assistance rendered me by General Macpherson and by the contingent from India, which arrived in this country under his command."

Extract from despatch by General Macpherson:—

"The Seaforth Highlanders, the Head-Quarters and three companies of the following Native Infantry Regiments, viz: the 7th and 20th Bengal N.I., the 29th Bombay N.I., the Mountain Battery, a squadron of the 6th Bengal Cavalry, and the Madras Sappers, left their bivouac (Kassassin) at 1-30 a.m. on 13th, and proceeded along the south bank of the Freshwater Canal. At dawn the first shot was fired, and the enemy forthwith replied with shell, but without inflicting loss. After a desultory opposition, the enemy's battery was taken with a rush, and the enemy fled, throwing down their arms. The entrenchments of Tel-el-Kebir were entered at 7-30 a.m., when all firing ceased. The division continued its march to Zagazig, and occupied that place with a squadron of the 6th Bengal Cavalry at 4-15 p.m. The Infantry followed, arriving from 6-30 to 9 p.m., some by a train which had been sent out to meet them. Great praise is due to all ranks in the Native Infantry for endurance, not a single man fell out or was carried."

Extract from despatches, C.R.E.s order dated 5-10-1882.

"As the British force in Egypt is about to be broken up, the Brigadier-General, C.R.E. avails himself of the opportunity to convey to the Royal Engineers and to the Queen's Own Madras Sappers and Miners under his command, his thorough satisfaction with the excellent manner in which all officers and men have done their duty. The campaign, though very short, has been far more than ordinarily trying and laborious. Nevertheless the admirable spirit which has pervaded all ranks, has enabled them to overcome every difficulty. Throughout this campaign the Corps has done good work, and has in all its branches added to its well established reputation. The Brigadier-General tenders to the Corps his hearty congratulations, and thanks them for the ungrudging spirit in which they have responded to every call upon them."

No. 3 T dated 25-11-1882, from the A.G. Madras army to the G.O.C. Bangalore Division."

"I am desired to forward to you the accompanying extracts from a note addressed to the C-in-C. by Colonel Browne C.S.I., R.E. late C.R.E. with the Indian Division in Egypt.

H.E. was much gratified on receiving so very satisfactory a report of the Madras Sappers and Miners, and I am to request that you will communicate the same to the Commandant of the Corps."

Extracts from a D.O. note dated 15-11-1882 from Colonel Browne R.E. to Sir Frederick Roberts:—

"I write to tell you how very pleased I was with them (Madras Sappers and Miners), and how thoroughly efficient, handy, and willing, I found them in every possible respect. We had some very heavy pieces of work in the railway line, and the amount of work they got through, and the neat and workmanlike way in which they did it, was in every way most satisfactory, and caused the R.E. from England no little astonishment. x x x x

Hamilton and his officers never made difficulties, were always ready to turn out to work, wherever and whenever required, and pulled so well with myself and my assistants, that we have only one opinion between us all, that on future occasions we may have them to work for us again."

Sir Frederick Roberts also said in February 1883:—

"In Egypt all authorities bore testimony to the efficiency and workmanlike qualities of the two companies, and I was much gratified to receive a letter from the C.R.E. with the Indian Contingent, speaking in the highest terms of the troops under Lieut.-Colonel Hamilton's command."

The following is an extract from a speech made in March 1884 by Lieut.-General Payn, Commanding the Bangalore Division:—

"Three times it has been my pleasing duty to despatch some of you on active service, and on each occasion you have added to the already glorious reputation of the Corps. There is scarcely a country in Her Majesty's Dominions in which you have not served, or a campaign in which you have not taken part. On all these occasions you have been remarkable for your discipline and gallantry as soldiers, and for your usefulness as Sappers."

Honours and Distinctions.—Major Hamilton was promoted Brevet Lieut.-Colonel. Lieut. C. H. Darling and Subadar Jeyaram were admitted to the 5th Class of the Medjidi.

1882. A prize of Rs. 25, and a badge of cross muskets and a crown in gold were authorised for the best shot among the R.E. N.C.O.s of the Corps, under I.A.C. 63 of 1882 but this was cancelled in 1884.

1883. In October 1883, the following number of rounds were allowed for the annual course of musketry:—

7	rounds, standing,	200	yards, at a 3rd class target
7	"	250	"
7	"	kneeling	300
7	"	kneeling	400 at a 2nd class target
7	"	lying	500
7	"	lying	600
<hr/>			
42	rounds	total for Individual Practices	
10	"	volleys	
10	"	independent	
5	"	moving or disappearing target	
13	"	company field firing	
10	"	regimental or brigade field firing. (if carried out)	
10	"	match shooting	
20	"	Commandant's allowance	
<hr/>			
120	rounds	total.	

1884. In the following August, the allowance was altered as follows—

10	rounds, standing, at	200	yards at a 3rd class target.
10	"	kneeling	300
10	"	"	400 2nd
10	"	lying	500 "
10	"	"	600 "
<hr/>			
50	rounds	total for individual practices	
10	"	volleys	
10	"	independent	
5	"	moving or disappearing target	
13	"	company field firing	
10	"	corps field firing, (if carried out)	
10	"	match shooting	
12	"	Commandant's allowance	
<hr/>			
120	rounds	total.	

The classification to be:—

Marksman	90	points	Figure of merit—75	very good
1st class	70	"	65	good
2nd "	50	"	55	moderate
				under 55 bad.

and musketry prizes were also authorised by S.G.O. 62 of 1884
Best shot in the Corps—Rs. 25, and a badge of cross carbines and crown, in gold.

Best shot in each company—Rs. 15, and a badge of cross carbines in worsted.

1886. S.G.O. 57 of 1886 laid down the following orders for the 10 rounds volley firing:—

5 rounds at 400 yards, single rank, kneeling or sitting.

5 rounds at 600 yards, extended order, any military position, and for the 10 rounds "Independent":—

"Sights will be adjusted to 200 yards, and will be kept there throughout the practice; bayonets will be fixed, and one round fired at 320 yards range, after which an advance of 30 paces will be made and another round fired, and so on till 100 yards range is reached; the first 4 rounds will be fired lying down, the next 4 kneeling, and

the last 2 standing; a full length figure target being used. For the moving and vanishing targets, the target not to exceed 432 square inches, and the distance to be not less than 150 yards.

Pay and Allowances.—Staff pay @ Rs. 15 per mensem was allowed to one R.E. N.C.O. in charge of the transport of each company (I.A.C. 69 of 16th June 1883). 1883.

Dress.—Khaki helmets with the regimental badge were introduced for British officers and N.C.O.s. from 30th November 1883, except for full dress. (R.O. 303 of 1883). The black pagri for Native ranks was sanctioned by G.O.C.C. 141 of 20th March 1884.

Establishment.—The Governor-General in Council ordered in December 1883 that in peace time only one Sergeant and one Corporal should be attached to each Sapper company. (R.O. 321 of 1883).

Trades.—In August 1884 it was ordered that recruits, who had no trade on enlistment, should, except when on field works, be only employed at whatever trade they had selected, except under the orders of the Commandant, until they had passed in such trade; and that no man was to be passed into the ranks until he had qualified in a trade. (R.O. dated 15th August 1884). 1884.

Submarine Mining Detachment.—From October 1884, a detachment of 30 men was furnished by "A" company for submarine mining at Rangoon, the detachment to be relieved every two years. (R.O. 249 of 1884), and this continued till November 1891, when all Submarine Mining Sections were embodied in a separate Corps, under I.A.C. 64 and 159 of 1891.

Working Pay of R.E. N.C.O.s.—In December 1884, orders were received from the C-in-C. that B.N.C.O.s. were only to draw working pay for the actual hours worked. (R.O. 302 of 1884).

War in the Soudan, 1885.—"F" company left Bangalore on 24th February, with Captain C. B. Wilkieson, Commanding; the other officers being Captain F. J. Romilly and Lieut. E. M. B. Newman; and with Surgeon J. Smyth M.D. I.M.S. in medical charge. 1885.

The company reached Suakin in March, and was present at the following operations:—

Reconnaissance towards Hashin on 19th March, and the battle at that place on 20th idem.

The battle of Tofrek (McNeil's Zariba) on 22nd March, when Captain Romilly, Lieut. Newman, and 12 men were killed, and Captain Wilkieson and 19 men were wounded. One of the latter dying of his wounds shortly after.

Captain S. A. E. Hickson R.E. and Lieut. J. Tanner R.E. temporarily attached to the company after Tofrek, but left it again in April.

The company was engaged during the attacks on convoys that took place from 24th to 28th March, as well as on the march to, and destruction of, Tamai from 1st to 4th of April.

Lieut. A. C. MacDonnell joined the company from Bangalore in April, but was invalided later; Captain C. H. Darling also joined in April.

During April and May, the company was employed on the Suakin-Berber railway, and the campaign concluded on the 17th May.

Captain Wilkieson was invalided from 8th June, and Captain Darling then took over the command of the company until 30th September, when he proceeded to England on leaving the Corps, and Captain W. D. Lindley took over the command from 1st October.

The company embarked at Suakin on 20th November, and returned to Bangalore.

1885. 1 B.N.C.O. and 14 Native N.C.O.'s and men had died of disease during the campaign.

Honours and Distinctions.—Captain Wilkieson was granted a Brevet Majority from 15th June 1885 (London Gazette of 25th August 1885).

The Honours "SUAKIN 1885" and "TOFREK" were granted to the Corps, under G.G.O. 478 dated 16th July 1886.

Extract from despatches of Lieut.-General Sir G. Graham dated 20th March 1885.

"The Royal Engineers, assisted by Madras Sappers and Miners and working parties of East Surrey, planned and executed the defensive works with great skill and coolness, although repeatedly threatened with attack by the enterprising enemy, who at one time swarmed round on all sides"

Letter from the A.G. Madras Army dated October 1885:—

"In forwarding for your information and communication to the Corps under your command, the accompanying proceedings of the Madras Government, I am directed to inform you of the satisfaction with which the Provincial C-in-C. has read this correspondence and to request that you will express to Major Wilkieson, Subadar Chinnayan, Jemadars Virasami, and Venaigamurti, and the N.C.O.s and men of the "F" company, Major-General Rowlands' appreciation of their excellent service, and of the manner in which they have upheld the renown of the Madras Army."

Government of Madras, Military Department, No. 5473, 5th October 1885 Read the following:—

Military Despatch, No. 215 dated London 20th August, 1885, from the Right Honourable the Secretary of State for India to H.E. the Right Honourable the Governor-General of India in Council.

1. I forward herewith for your Lordship's information a copy of a letter from the Horse Guards enclosing copy of a communication received from Lieut.-General Sir G. Graham, K.C.B., R.E. relative to the services rendered by "F" company "Q. O." S. & M. during the recent campaign in the Eastern Soudan.

2. I have much pleasure in specially bringing to the notice of your Lordship's Government, as desired by H.R.H. the Field Marshal Commanding-in-Chief, the good service and gallant conduct of Captain C. B. Wilkieson, R.E. and the officers, N.C.O.'s and men under his command.

Letter No. 7700-2477, dated Horse Guards, War Office, 28th July, 1885, to the Under Secretary of State for India.

"I am directed by the Field Marshal, Commanding-in-Chief, to forward herewith for the information of the Secretary of State for India in Council, a copy of a communication received from Lieut.-General Sir G. Graham, K.C.B., R.E., relative to the service rendered by 'F' company 'Q. O.' S. & M. during the recent campaign in the Eastern Soudan. H.R.H. would be glad if the good service and gallant conduct of Captain C. B. Wilkieson R.E., and the officers, N.C.O.s. and men under his command, are specially brought to the notice of the Government of India."

From the Officer Commanding R.E. Suakin Force, to the Assistant Military Secretary, dated 19th May 1885.

"I have the honour to request that the good services performed during the expedition by 'F' company Queen's Own Sappers and Miners may be specially brought to the notice of the Government of India. During the attack on McNeil's Zariba, on the 22nd March, there were 36 casualties among the officers, N.C.O.s. and men of the company, yet so little did this

severe loss affect the moral of the company, that the men worked with the greatest coolness a few days afterwards clearing the bush during an attack on the convoy which they were accompanying. The company was present in nearly every action of the campaign, and it was afterwards employed in the construction of the railway, some distance in advance of the head of the line. I would wish also that the conduct of the Commanding Officer, Captain C. B. Wilkieson, may be specially brought to notice. He was the only surviving officer after the attack on McNeil's Zariba, and though seriously wounded by a spear in the thigh, he refused to go to hospital, and remained on duty for twenty-four hours, until relieved by another officer." 1885.

It is submitted that this report may be forwarded to the D.A.G. of R.E. to be laid before H.R.H. the Field Marshal Commanding-in-Chief.

The conduct of "F" company "Q. O." S. & M. is specially mentioned as regards the campaign generally, in paras. 34 and 38 of the Lieut-General's despatch No. 89 dated 30-5-1885.

Captain Wilkieson is also mentioned in the same para.

A copy of Colonel Edward's report will doubtless be forwarded to the Secretary of State for India, for transmission to the Governments of India and Madras."

Extract from Lieut-General Sir G. Graham's despatch to the Secretary of State for War, dated Alexandria, 30-5-1885. No. 89.

"The Madras Sappers were present on the action of the 22nd March, and suffered severely, while contributing materially to the heavy defeat there inflicted on the enemy. . . . They again proved themselves first-rate troops, whether for fighting or for work.

I would also bring forward the following as able and efficient officers x x x x x Captain Wilkieson R.E. Commanding the company of the 'Q.O.' Madras S. & M., who was wounded at the zariba on 22nd March. x x x x

I cordially concur in Colonel Edward's observations. My experience of the Madras Sappers during the last campaign in the Soudan confirmed the impression I received during the campaign in Northern China in 1860, as to the invaluable qualities of the men of this Corps, whether displayed in hard work or in hard fighting."

Orders by Brigadier-General Sir J. Hudson, November 19th 1885.—
"The Brigadier-General Commanding does not hesitate to say that of the troops which accompanied him from India in March last, no Corps has done a greater amount of useful work, and certainly none in proportion to its number has suffered so severely in action and from sickness as the 'F' company, 'Q.O.' Sappers and Miners.

Such loyal and devoted services add lustre to the already high reputation enjoyed by the distinguished Corps of which the 'F' company is so worthy a unit.

Sir John Hudson offers his best thanks to Captain Lindley and all ranks of the company for the excellent service and assistance they have at all times rendered in the various works on which they have been employed, and in bidding them 'Good-bye' expresses the hope that the exigencies of the service may permit of their enjoying that rest of which all of them stand so much in need."

Letter 393 from Brigadier-General Sir J. Hudson, November 1885, to Secretary Government of India, M.D. "The 'F' company Queen's Own Sappers and Miners having embarked for India I do myself the honour to request you will be so good as to bring

1835. under the notice of the Government of India the very excellent services performed by this detachment since it has been under my command.

"Since the day it landed here in March last, the company has been continuously employed, and it is not too much to say that it has done more useful work than any Corps which came from India; and it is with much regret I am obliged to add that in proportion to its numbers it has, I fear, suffered more severely from sickness and the effects of the climate.

"The high reputation enjoyed by the Madras Sappers has been nobly sustained by this company under its officers:—Major Wilkieson, Captains Darling and Lindley, and Lieut. MacDonnell; and those other gallant men, Captain Romilly and Lieut. Newman, who were killed in action on the 22nd March.

"I feel I am only doing my duty in bringing thus prominently to notice of the Government of India the excellent service of this company."

Employment.—In April 1885 nine men were despatched to the Straits Settlements for survey work.

G.O.G. 265, dated September 1885. "The Right Honourable the Governor in Council is highly gratified to hear of the excellent service performed at Harrar, and on the road to that place, by a party as below of the 'E' company 'Q. O.' S. & M., now quartered at Aden, and resolves to communicate the correspondence regarding it to Her Majesty's Secretary of State for India.

2193 Hav.	Subbarayan	822 Pte.	Jaganathan (*)
244 Nk.	Francies (*)	895 "	Govindasami (*)
376 Pte.	Narayanasami	923 "	Sannayasi (*)
449 "	Yenkanah	977 "	Venkatachalam
699 "	Husain Khan	1016 "	Muttusami

(*) Specially mentioned for assistance rendered in surveying the caravan route between Harrar and Berbera.

Organisation.—Under I.A.C. 97 of 31-7-1885, the designation of 42nd company R.E. was changed to "K" company.

From 1-8-1885, the organisation of "A" company was fixed at—

Sections	B.N.C.O.s	N.O.s	Hav.	Nk.	Sepoys	Buglers.
1. Torpedo	8	1	1	2	38	1 *
2. Telegraph	6		1	2	24	
3. Printing	2				2	
4. Lithography	2				2	
5. Photography	2				2	
6. Pontooning	1	1	1	2	32	1
7. Coy. Duty	1		1	2	5	
Total	22	2	4	8	105	2

*Including 10 permanent.

(R.O. 241 of 1885.)

Arms and Musketry.—Orders were issued in G.O.C.C. India, dated 6-10-1885, for the rearmament of the Corps with M.H. rifles, but owing to the war in Burma, and other causes, the rearmament was not completed till after the 1889-90 course had been fired.

For the Martini Henry rifle the classification was fixed at Marksman 100 points; Figure of Merit 80 very good

1st Class	80	"	70 good
2nd "	70	"	60 moderate
			bad, if under 60.

Dress.—The badge of the Royal and Imperial Cypher within the Garter, was taken into wear on the helmet by officers and British N.C.O.s in December 1885. (R.O. 420 of 1885).

Reorganisation of the Corps.—Special India Army Circular 1885. 174, dated 16th December, 1885.

"Her Majesty's Government having sanctioned the reorganisation of the Corps of Sappers and Miners in the three Presidencies; the Right Honourable the Governor-General in Council is pleased to promulgate the following rules and regulations—which will have effect from the date of this circular"—:

In the first 6 paras., and Appendices, the establishment is laid down as follows:—

1 Commandant.	12 Sergeants.
1 Supt. of Instruction.	14 Corporals.
1 Supt. of Park and Train.	14 Second Corporals.
1 Adjutant.	8 Subadars.
8 Coy. Commanders.	16 Jemadars.
8 Coy. Officers.	48 Havildars.
1 Warrant Officer.	64 Naicks (increased to 80 by I.A.C. 146 of 30-9-1886.
1 Sergt. Major.	1200 Sappers.
1 Q.-M. Sergeant.	16 Buglers.
56 Recruit Boys.	

Six Service companies numbered 1 to 6, and two Depot companies, lettered "A" and "B".

Each company except "A" to consist of:—

1 Coy. Commander.	2 Jemadars.
1 Coy. Officer	6 Havildars.
2 British N.C.O.s	10 Naicks.
1 Subadar	150 Sappers.
2 Buglers.	

and a peace establishment of 1 Lascar, 2 Bhistis, and 2 Sweepers.

"A" company to consist of:—

	2 Pontoon Sections.	2 Telegraph Sections.	2 Field Print. Litho. and Photo Sections.	S.-M.M. Section.	Total.
Br. Officers	2				2
Br. N.C.O.s	2	8	8	8	26
N. Officers	2			1	3
Havildars	3	2		1	6
Naicks	4	3		3	10
Sappers	64	32	14	30	140
Buglers	1			1	2
Lascars				10	10
					199

"B" will be the Recruit Depot Company; immediately on the outbreak of war, the "B" company will be increased by 50 Sappers, the order for such increase being issued by the Government of India.

BRITISH OFFICERS.

7. The officers of the Sappers and Miners, will belong to the Royal Engineers, and will take rank according to their regimental seniority in that Corps.

8. The Commandants will (when permanently appointed) be regimental field officers of Royal Engineers, and will hold their appointments subject to the limitations laid down in A.R.I. Vol. I., part. I. Article 267, except clause (c), and also subject to the proviso that they vacate their appointments on removal from the Corps of R.E. on half-pay. The staff pay will be Rs. 700 in Madras.

9. The Superintendents of Instruction and Park will be officers of regimental rank, not higher than that of Major, and subject to this proviso, will hold their appointments for 5 years. Their pay will be as laid down in A.R.I., Vol. I., part I. Article 448.

10. The senior of these two officers in each Corps, if a Captain or Major, and next to the Commandant in regimental seniority in the R.E., will be second-in-command, with an addition to his

1885. staff pay of Rs. 100 per month. The tenure of the appointment of second-in-command will terminate with that of the other appointment of the officer holding it.

11. When the senior of the two above mentioned officers is not a Captain, or not the next to the Commandant in seniority in the Corps of R.E., the officer next in such seniority shall officiate as second-in-command.

Paras. 10 and 11 were subsequently cancelled.

12. The Adjutant will be a Subaltern, and will vacate his appointment after 5 years tenure, or on promotion to Captain, if such promotion occurs before he completes 5 years tenure.

(This was amended by I.A.C. 48 of 1886 to read "The Adjutant, when appointed, will be a Subaltern, and will vacate his appointment after 5 years tenure.")

13. The duties of Quarter-Master will be performed by a Subaltern, selected from the Company Commanders or Company Officers; the officer actually performing the duty will receive an addition to his staff pay of Rs. 50 per mensem.

14. The Company Commanders will be Captains or Subalterns, and will receive staff pay at Rs. 240 per mensem.

15. The Company Officers will be Subalterns, and will receive staff pay at the rate of Rs. 112 per mensem. They will be allotted in the proportion of 1 per company in peace time, and three in war time.

16. The present company command allowance is abolished, but the contract allowance for repairs of arms, writing, and stationery, will be increased to Rs. 35 per company. Office allowance will be

Adjutant	Rs. 80	Instruction Office	Rs. 39
Quarter-Master	„ 50	Park Office	„ 50

17. The various rates of staff pay specified above, will be in addition to regimental pay and allowances (except horse allowance) in every case, except that of Regimental Majors, who are restricted to the Staff Corps pay of their rank.

18. The following language examinations will be required from officers of the S. & M.; the necessary examination being carried out as at present :—

Regimental Staff	As for Executive Engineer M.W.D.
Company Commanders within 6 months of appointment as such	„ „
Company Officers within, 6 months of appointment as such	As for Assist. Engineer 1st grade of M.W.D.

Any of the above tests may be dispensed with in special cases at the discretion of H.E. the C-in-C.

19. All officers of the S. & M. when permanently appointed, will be entitled to the advantages of the furlough regulations of 1868.

20. Every officer of the S. & M. will be required at all times to keep up one serviceable charger, on account of which he will receive no horse allowance. When required by the regulations to keep up more than one charger, these officers will become entitled to horse allowance, at the usual rate, for the extra chargers so maintained.

21. Officers employed with their companies under the M.W. or P.W.D. will not be entitled to extra remuneration, unless their duties extend beyond the supervision and charge of work done by their own men.

22. On Field Service, company commanders will be considered as Field Engineers, and company officers as Assistant Field Engineers.

The Warrant Officer will be attached to the Park.

24. The Regimental Sergeant-Major of each Corps will be the Assistant to the Superintendent of Instruction. The Sergeant Instructor is abolished. The Regimental Quartermaster-Sergeant will be retained on the same footing as at present. 1885.

26. The Sepoys will in future be styled "Sappers".

27. The senior havildar of the recruit depôt company will perform the duty of Regimental Havildar-Major, and this separate rank is abolished.

31. Each service company will always be in possession of, and will be accompanied in the field, and on the march, by its general service equipment.

32. The depôt companies will be stationed at the Head-Quarters of the Corps, and are not available for ordinary reliefs.

33. It is intended that the bridging and telegraph sections of the "A" Depôt Company referred to above, shall contain specially trained men in their respective branches, who shall be used to supplement service companies when called upon to undertake work requiring their assistance; that the submarine mining sections shall be the depôt for that service at the Corps Head-Quarters, and shall find the detachments required at the various submarine mining stations; and finally that the printing, lithographic, and photographic sections shall be available for their special work as required at the H.Q. of Army Corps, etc., in the Field. It is however to be understood that the provision of these special organisations is not to be considered as doing away with the necessity for imparting the most thorough training possible to all service companies in bridging and telegraph duties, and to individuals as far as practicable, in the other duties mentioned, since it is obvious that circumstances may frequently render it necessary, as heretofore, to undertake bridging and telegraph operations, and other special work, with ordinary service companies of Sappers, in the absence of the special sections referred to.

34. The special sections for bridging, telegraph, printing, lithograph, and photograph services will have charge of the equipments of these branches which are maintained at the H.Q. of the Corps.

35. The Engineer Equipments in possession of the Corps, will be as follows, and will be supplied and renewed in the ordinary course by the Ordnance Department:—

- 6 sets, Company equipments, pack for mule carriage, as given in Tables A and C Engineer Equipments in India, 1884.
- 2 sets, Electric Firing equipments, tension;
Table E, Engineer Equipments in India 1884.
- 4 sets, Electric Firing equipments, quantity;
Table F, Engineer Equipments in India, 1884.
- Half unit of 60 yards, Heavy Bridge equipment;
Table J, Engineer Equipments in India, 1884.
- 1 set, Field Photographic equipment;
Table O, Engineer Equipments in India, 1884.
- 2 sets, Field Printing, and Lithographic equipments;
Table P, Engineer Equipments in India, 1884.
- 1 set, Head-Quarters Instructional equipment;
Table Q, Engineer Equipments in India, 1884.

36. When changes in the patterns of articles of equipment are considered to be necessary, the Commandant of the Corps will submit his proposals through the prescribed channel for the consideration of the local military authorities, and for subsequent transmission through the I.G. of M.W. to the A.G. in India, for the orders of H.E. the C-in-C.

1885. 37. Corps Transport will be for the present on the existing footing. It will be detached for general transport duty under orders from Army Head-Quarters only.

38. Where any of the changes above detailed involve abolition of existing appointments, or reduction in existing rates of pay, such abolition or reduction will be carried out on the next vacancies occurring in the appointments concerned, except in the reduction in the number of Subadars, which will be carried out by the absorption of one vacancy in every three occurring, until the reduction is completed. Pending this absorption the total number of sanctioned Native officers is not to be exceeded. All existing regulations not mentioned in this Army Circular, will remain in force.

Regimental Order No. 28 dated 26-1-1886.

The existing companies will be re-numbered (or re-lettered) as follows:—

Present Company.	New Company.
"A"	"A"
"B"	No. 2
"C"	" 3
"D"	" 4
"E"	" 5
"F"	" 6
"G"	" 1
"H"	"B"
"I"	} Broken up and merged in the other companies.
"K"	
"R.D"	

Every company, (A excepted) will be divided into 3 Divisions, each under a Native officer; each Division will be sub-divided into 2 sections.

The Divisions will be numbered I, II, and III, and the sections from 1 to 6.

But under C.O. 346 of 1893, the sections were named, "Right Section" and "Left Section" respectively, of each Division.

Third War in Burma, 1885-87.—The following were detailed to join the expeditionary force to Upper Burma:—

"C" company under Captain Dorward, and Lieut. Anderson.

"D" company under Captain Andrews Speed.

"H" company under Captain Badgley.

Telegraph section of "A" company under Lieut. Glanville.

The expedition was under the command of Major-General H. N. D. Prendergast, V.C., C.B., R.E., formerly Commandant of the Corps, and the following officers of the Corps were on his staff.

Lieut.-Col. E. W. Begbie, Director of Signalling.

Brevet Major C. B. Wilkieson, Adjutant, R.E.

The following Lieutenants were appointed from Military Works to the companies:—

H. H. Barnett, C. D. Learoyd, J. Stewart, C. N. Beevor, and T. F. B. Renny-Tailyour,

"D" and "H" companies and the telegraph section from Bangalore, reached Madras on 29th October 1883, and 'C' company from Secunderabad arrived there on 31st; they embarked on 3rd November, and sailing on 4th in the *Empress of India*, reached Rangoon on the 10th.

The three companies and telegraph section, together with two Bengal and one Bombay company, and a field park from Calcutta, embarked on the River Steamer *Shway Myo* on 11th and 12th November, starting up the river on the latter date.

Lieut. Beevor was so ill that he had to be left behind, and he was replaced by Lieut. W. R. Morton, whose services were obtained from

the Burma Government. Lieut. Morton proceeded by rail to Prome, 1885. and joined the *Shway Myo* as she passed there.

General Prendergast crossed the frontier about noon on 15th; and Major Wilkieson came up and joined the Head-Quarter ship, the *Thambyadine* that evening. On 16th, columns were landed on both banks, and Major Wilkieson accompanied that on the right bank ordered to move against a battery at Myoungbenmaw, no opposition was met, although the battery had fired on the leading ships, and the battery was destroyed.

On 17th columns were again landed on both banks; Major Wilkieson accompanied the left bank column against the Guegyaum redoubt, this column met with little resistance, and took the redoubt without loss. The Madras companies went with the right bank column against the fort of Minhla, this column was strongly opposed, and the fort was captured at the point of the bayonet.

At Yenangyoung on 20th, Lieut. Glanville with a telegraph detachment was landed with "C" company to reopen the telegraph station, but the telegraph office had been completely cleared out, and it was not found possible to open up communication.

On 23rd Lieut. Learoyd was appointed Orderly Officer to the G.O.C. Force, and Lieut. J. W. Pringle from 5th Bengal company, replaced him in "C" company.

The column reached Mandalay on 28th November, and in the afternoon the Palace was occupied, and reconnoitring parties were sent out under Captains Dorward and Speed, and Lieuts. Barnet, Glanville, Pringle and Renny-Tailyour to report on the principal roads. The Sappers remained at Mandalay, and on 4th December moved into quarters in the Palace enclosure, and on 7th Lieut. Morton was retransferred to the Public Works.

Lieuts. Glanville and Renny-Tailyour were attached to a flying column from 7th to 14th for reconnoitring purposes, and Lieut. Pringle to another from 8th to 14th.

Lieut. Beever rejoined on 15th from Rangoon, and on 17th Lieut. Barnet with 10 men started with an expedition to the Chindwin river, whilst on 19th Major Wilkieson accompanied on expedition to Bhamo. In January Major Wilkieson accompanied a small party on a hasty 1886. reconnaissance to the Kachin Hills.

During January the three companies were constantly employed with flying columns; one of these columns under the command of Captain Dorward successfully attacked a number of the enemy at Madeya, and inflicted a severe loss on them.

Lieut. Anderson was invalided early in January 1886.

Lieut. Pringle rejoined the Bengal S. and M. on 6th February 1886.

On 27th April there was a smart brush with the enemy at Myinmu near Myingyan, the O.C. of that place reporting on 27th:—

"The brunt of the fighting fell on the Madras Sappers who fought with great valour, ultimately driving the rebels out of the village. Captain Badgley was wounded in the shoulder whilst leading his men against the main body of the enemy at the west of the village."

No. 1 (late "G") company under Lieut. H. E. Goodwyn, which had been stationed at Rangoon, moved up about the end of 1885, with the Eastern column, *via* Tonghoo, and Nyingyan (afterwards renamed Pyinmana) to Yemethin, where it remained until it returned to Bangalore in May 1887. During the time the company was at Yemethin Captain Goodwyn (promoted early in 1886) was employed in command of various flying columns. Lieut. C. H. Roe joined this company in July 1886, and was employed with about 30 men in building posts at

1886. Imbetgone, Pyurbway, and Kahnla, besides miscellaneous work at Nyingyan, and Meiktilla

Captain Dorward was appointed to the Staff of the Upper Burma Field Force on 28th May and left the Corps.

Captain Badgley was invalided at the end of May 1886.

Lieut. R. T. R. Lawrence was posted to No. 4 company from 11th June 1886, but he was invalided in the following November.

Lieut. Stewart was invalided in July 1886, and in the same month, Lieuts. Palmer and Wright joined No. 3 (late "C") and No. 4 (late "D") companies, whilst a little later in the month Captain A. W. Cockburn joined No. 4 company to relieve Captain Andrews Speed, ordered to return to Bangalore to take up the appointment of S. of P.

Lieut. C. N. Beevor was transferred to the P.W.D. in August.

Lieut. Glanville was wounded at the affair of Zebingale in October 1886, and was invalided in the following February.

Lieuts. Learoyd and Barnet left No. 3 company in October and November respectively, on being appointed Field and Assistant Field Engineers.

1887. Nos. 3 and 4 companies left Burma for Bangalore in March 1887, and No. 2 company arrived from Bangalore in Burma the same month.

The following are extracts from despatches:—

From Lieut.-General Sir H. N. D. Prendergast, K.C.B., V.C., dated 26th March 1886.

"Lieut.-Colonel E. W. Begbie has been in charge of the Army Signalling of the Force. I have already in my former despatches had the honour to place on record the great value that the expedition has derived from visual signalling throughout the campaign. Lieut.-Col. Begbie by his sustained personal interest in and unremitting personal superintendence of the working of his department, has conducted much to the successful results obtained. Captain A. R. F. Dorward commanded the "Queen's Own" Sappers and Miners, and was a most efficient Field Engineer. He shewed eminent qualifications for command when selected to command a mixed force in the Field. Lieut. C. D. Learoyd was a most useful Orderly Officer. His professional knowledge and skill as a surveyor, enabled him to perform valuable service with detached columns."

From Major-General Sir G. S. White, K.C.B., V.C., dated 10th March 1887—

Brig.-General East mentions the following officers:—

x x x x x Captain A. W. Cockburn R.E. x x x x

Brig.-General Stewart brings the following to notice for good service. x x x x x Captain H. H. Barnet R.E. x x x x

Captain Barnet has done very hard work with the Ruby Mines expedition, of which he was the Pioneer.

Brig.-General Lockhart recommends the following for special recognition. x x x x x Captain H. E. Goodwyn R.E. x x x x x

The C.R.E. brings forward the names of the following, who have done special good service. x x x x Captain (Brevet Major) C. B. Wilkieson, Captain H. H. Barnet, Lieut. T. F. B. Renny-Tailyour, Lieut. F. Glanville. x x x x

I specially beg to recommend x x x Captain Goodwyn x x x x Captain Dorward also recommends to the favourable consideration or the C-in-C. x x x x and Colour-Havildar No. 1753 Marimuttu as a Native N.C.O. of quite exceptional ability and worth.

Captain A. R. F. Dorward has done constant and very heavy work as C.R.E. The vast amount of field engineering that has been necessary during this long campaign has been conducted under his orders, and the provision of barrack accommodation has devolved on him; his

capacity is well known to the C.-in-C., and I recommend him with confidence to H.-E.s consideration. His promotion would be a benefit to the service. 1887.

Extract from General Orders by the Government of India, dated 16-6-1887 :—

"The Governor-General in Council desires to thank the C.R.E. Captain A. R. F. Dorward, D.S.O., x x x for the ability and efficiency with which they have conducted their duties."

Honours and Distinctions.

Major-General H. N. D. Prendergast, V.C., C.B., was made a K.C.B.

Lieut.-Colonel Begbie received a Brevet Colonelcy, and Captain A. R. F. Dorward a Brevet Majority.

Captains Dorward and Goodwyn, and Lieutenant Glanville received the D.S.O.

Colour Havildar Marimuttu was promoted to Subadar on the formation of the Burma Sappers and Miners from 30-8-1887.

G.G.O. 64, dated 16-1-1891 :—

The Governor-General in Council has much pleasure in announcing that Her Majesty the Queen Empress of India has been graciously pleased to permit the Corps named below, to bear upon their Colours, Standards, and Appointments, the words "BURMA, 1885-87", in commemoration of their gallant conduct during the operations resulting in the conquest of Upper Burma.

x x x x x

The Madras Sappers and Miners, (Queen's Own).

Clothing.—S.G.O. 44, dated 8-10-1886 :—

The C.-in-C. is pleased to notify that Government have sanctioned the following revised scale of free issue of clothing for the 'Q.O.' Sappers and Miners, with effect from the 1st April 1887, in substitution of that now in force :—

1st year—Khaki coat and trousers, for all ranks.

2nd year—Cloth tunic and serge trousers, khaki coat and trousers, for all ranks.

3rd year—As in 1st year.

4th year—As in 1st year.

2. In addition to the above, a free issue of khaki material to the value of Re. 1, to each Native N.C.O. and man will be made quadrennially in the year in which the full dress issue is made.

This free issue of khaki was abolished in 1890, and compensation in lieu at the rate of Rs. 3 per annum was sanctioned by S.G.O. 25 of 28-3-1890.

Engineer Pay of R.E. Warrant and N.C.O.s—I.A.C. 148 of 23-10-1886 modified the rules of working pay admissible to Warrant and N.C.O.s of R.E. serving with Corps of Sappers and Miners, as follows :—

The Warrant Officers in charge of the Park, will draw the pay, Engineer pay, and allowances of Regimental Sergeant-Majors until they elect for the pay of their warrant rank.

W.O.s, N.C.O.s and men of the R.E. shall receive instead of working pay, a special rate of pay which shall be called "Engineer Pay," the daily rates of which are as follows :—

	s.	d.
A rate	2	0
B "	1	8
1st "	1	4
2nd "	1	0
3rd "	0	8
4th "	0	6
5th "	0	4

1886.

1886. The ordinary working day will be considered equal to 8 hours, including any part of the day between reveillé and retreat.

For less than 2 hours work, no Engineer pay.

For 2 hours $\frac{1}{4}$ day do.

For 2 to 4 hours $\frac{1}{2}$ day do.

For 4 to 6 hours $\frac{3}{4}$ day do.

For 6 to 8 hours a full day's Engineer pay.

For work in water, or out of the regular working hours, or in addition to an ordinary full day's work, Engineer pay will be issued at rates one-half higher than the ordinary.

If task work is given, the task shall be allotted so that with fair diligence a man will earn his usual rate. No Engineer pay shall be issued to a man employed on piece work.

Engineer pay is not to be issued to soldiers :—

- (1) in receipt of extra-duty pay
- (2) on account of fatigue duty
- (3) sick in hospital or quarters
- (4) absent either with or without leave
- (5) under arrest, or in confinement prior to a conviction
- (6) undergoing imprisonment

The rating for Engineer pay of R.E. soldiers on arrival in India, is that held by them on leaving England.

Soldiers on A or B ratings, shall not receive the corresponding Engineer pay, unless employed on the trade for which they are so rated, or unless otherwise entitled to it under these regulations.

The following receive Engineer pay for every day they are present and effective :—

- (a). At A rate—Regimental Sergeant-Major, and Quartermaster-Sergeant, provided they have passed the L.S. examination.

The Company Sergeant-Majors, whether permanent or acting, of the H, J, and K companies of R.E., and the senior B.N.C.O.s of companies on detachment, provided they have passed the L.S. examination.

W. and N.C.O.s serving with Engineer field and siege parks, including the journey to join and return from them.

- (b). At B rate—The senior B.N.C.O.s of companies at Corps H.Q. provided they have passed the L.S. examination.

- (c). 1st rate—Soldiers in charge of the equipment and transport of companies, provided they have passed the colloquial examination.

- (d). One rate lower than their rating :—

On active service, at camps of instruction, marching in relief, or joining for the above, and returning therefrom.

Soldiers attached to the Corps, who do not come under the above rules.

Except as specified above in (a) (b) or (c), soldiers on the A and B ratings will draw one rate lower when employed at their trades, when otherwise employed they will be treated for these orders as if on the 1st rating.

The number of men on each rating, exclusive of those coming 1886, under (a), (b), and (c) above, shall as a rule be within the following proportions :—

A rating	25 %	of the number remaining after deducting those
B	25 %	coming under (a), (b), and (c), above, and those
other ratings	50 %	serving in the submarine mining establishment.

soldiers can therefore only be advanced to A or B rating when there is a vacancy on this scale.

To be advanced to A or B rating a soldier must be reported by a regimental board as "Very superior" or "Superior" in one of the following trades :—

Clerk	Steam machinist	Paper-hanger
Surveyor	Engine driver	Plasterer
Draughtsman	Bricklayer	Plumber
Photographer	Brick and tile maker	Sawyer
Printer	Carpenter	Slater
Lithographer	Platelayer	Smith
Telegraphist	Cooper	Smith's fitter
Electrician	Gasfitter	Well sinker
Submarine Miner	Mason	Wheelerwright
Diver	Painter	

Subject to the above provisions, the Commandant can advance a soldier permanently or temporarily from one rating to another, and in cases of misconduct, neglect, or inefficiency in connection with work for which a soldier receives Engineer pay, the Commandant, or O.C. Detachment may stop the whole or any part of his Engineer pay for the day or days on which he misconducts himself, or may reduce him either for the time, or permanently.

General zeal and activity while on work, as well as skill, will be considered in qualification for advancement to a higher rating.

Pension, Pay, and Allowances.—The following concessions were granted under I.A.C. 170 of 1886 :—

Free conveyance by rail for all Native ranks proceeding on and returning from furlough, to come in force from 1-1-1886.

Recruits to receive full pay from the date of their enlistment, together with marching batta and free conveyance to the H.Q. of the Corps.

The 2nd and 3rd rates of G.C. pay were obtainable after 6 and 10 years instead of 9 and 15 years respectively.

The annual rate of half mounting was raised from Rs. 4 to Rs. 5 commencing with the 1st day of 1887.

Service for the ordinary pension was reduced from 32 to 21 years, with the superior rate of pension remaining after 32 years.

I.A.C. 172 dated 31st October 1886, granted the following staff allowances :—

Subadar Major	Rs. 50	In addition to working pay.
Senior Native Instructor	" 50	} Inclusive of working pay.
Junior	" 30	
Native Adjutant	" 17/8/-	In addition to working pay.
Bugle Major	" 5	} In addition to working pay for every day present and effective.
Drill Havildar	" 5	
Drill Naick	" 2/8/-	
Colour Havildar	" 3	
Havildar Instructor	" 5	
Pay Havildar	" 7	

Under the same order, Rs. 8 per mensem was granted per company in aid of the messing of B.N.C.O.s.

Establishment.—Under the same order, the following appointments were abolished :—

1886. Schoolmaster and Schoolmistress.
2nd Munshi, replaced by Junior Native Instructor.
and the Quartermaster's establishment was laid down as follows :—
10 Lascars
18 Bhistis, or 9 Pakhalis
2 Sweepers for B.N.C.O.s at Corps H.Q.
7 Toties, 2 for B.N.C.O.s, and 5 for companies at H.Q.
Bazaar establishment—
1 Chowdry
2 Peons
Conservancy—
4 Filth and scavengers' carts
1887. **Dress.**—R.O. 156 of 26-3-1887.
With reference to S.G.O. 44 of 8-10-86, khaki will be adopted as the Corps dress from the 1st proximo.
Black trousers now in possession may be worn, for work only, until worn out, or until 31-3-1888.
In G.O.C.C. India, dated 28-6-1887, a universal pattern of khaki coat for officers was laid down; up to that time officers in the Corps had each had their khaki coats made according to whatever pattern they preferred.
- Workshops.**—The "Schools" running round the workshop enclosure on the east side, from the north gate, to the south gate, were commenced in 1887; these buildings were completed in November 1891.
- Contract Work.**—The following rules were laid down in S.G.O. 58 of 9-12-1887, for the employment of Sappers and Miners under the P.W.D.:—
"Tools will in all cases be supplied free of charge by the department employing the troops, the men using them being required to pay for any damage that may be caused by unfair usage or negligence on their part. When employed at a distance from barracks, troops should be encamped, using their own camp equipage, and regimental or dépôt carriage. Their rations, water supply, and the sanitation of their camps should be provided and arranged for exactly as at Camps of Exercise, no extra cost being debitable to the Public Works under these heads."
- These rules still held good, when companies were employed on the Kohima-Manipur road in 1891-92-93; but when employed on the Kushalgarh-Kohat-Thall railway in 1901-02, one-third of the contract money received was credited to Government to meet the expenses of the move, hutting, water supply, etc., and in addition the troops were to keep all tools issued, in repair, but later when it was represented how badly the work had paid the troops, the G. of I. under letter 417 M.W. of 31-1-1902, sanctioned the cost of depreciation of the tools by fair wear and tear, being debited to Military Estimates.
- Under G. of I. 4225 M.W. dated 29-12-1904, fresh rules were introduced as follows :—"The troops to receive local civil contract rates, and to pay all extra expenditure incurred in connection with such employment, i.e. compensation for dearness of provisions, transport, movement, extra clothing, hutting, water supply, conservancy, etc., as well as all repairs and maintenance of tools and plant. No working pay, engineer pay, or sapper pay to be issued when employed on public or military works, or when proceeding to or returning from such work."
- This was slightly modified by G. of I. letter No. 2372 M.W. dated 19-8-1905, which laid down that R.E. N.C.O.s and Staff Native N.C.O.s might draw engineer and working pay, chargeable to the Corps grant,

but that in such a case they should receive nothing further from the contract money. This letter also sanctioned working pay being drawn for the men when employed on instructional work, owing to there being no contract work available.

On its being represented that the move of a company to take up a contract would often entail a greater expenditure than the company funds could possibly meet, the G. of I. A.D. letter No. 1219 C dated 16-4-1907 sanctioned the advance to a company taking up a contract, of $\frac{1}{4}$ of the amount of the contract, or Rs. 10,000 whichever was less.

In A.G.s No. 303 E of June 1909 it was laid down that Government would give neither pensions nor gratuities in the cases of men injured or killed whilst employed on contract work, and that in such cases gratuities or pensions must be paid out of the contract money earned; whilst this principle was carried still further in A.G.s No. 302 E of the same date, which laid down a similar ruling in the case of British officers killed or injured whilst employed on contract work.

These last two rulings made it practically impossible for a company to take up any contract in future.

Burma Company of Sappers and Miners.—Under I.A.C. 1887. 117 of 9-7-1887, a company designated “The Burma Sappers and Miners” was raised, and affiliated to the Q.O. Sappers and Miners.

Its establishment was fixed as the same as that of a service company of the Q. O. Sappers and Miners, except that it was to have in addition—

a third B.N.C.O	} to be employed only if necessary.
4 cooks	
2 extra bhistis	

The officers to be lent from the three Corps of Sappers in rotation, and not to be replaced in their respective Corps. Each officer to be relieved after two years' service in the company, if he desires it. This was altered by I.A.C. 91 of 15-6-1883 as follows:—

“The officers to form part of, and be an augmentation to the establishment of officers of the Madras Sappers and Miners.”

The establishment of B.N.C.O.s to form part of, and be an augmentation to the establishment of that class in the Madras Sappers and Miners, and except that they will receive extra pay, they will be on the same footing as the other B.N.C.O.s of that Corps. The issue of such extra pay to be irrespective of any Burmese language tests. Subject to the exigencies of the service, they will not be required to serve more than two years with the Burma Sappers and Miners. The B.N.C.O.s first appointed to the new company will be selected from the Bengal Sappers and Miners in which Corps there is a surplus, and they will be transferred to the Madras establishment.

The Native officers will be drawn from the Madras Sappers and Miners, and may be selected from the ranks next below those in which they are to serve in the Burma company; they will receive rates of working pay 50 per cent. in excess of those they are entitled to in India, for every day they are present and effective in Burma.

Such of the Native N.C.O.s as are transferred from the Madras Corps, may be selected from the ranks next below, and will receive 50 per cent. additional working pay for every day they are present and effective in Burma.

Native officers and N.C.O.s transferred to the Burma Sappers and Miners will be seconded in their own Corps, and if they elect to return to it, they will remain supernumerary till absorbed. They will be eligible for promotion in their own Corps while thus seconded.

1887. The vacancies in the Burma Sappers and Miners caused by the reversion of N.O.s and N.C.O.s will as a rule be filled by promotions within the Burma company, but the Government of Madras can authorise the C-in-C. in Madras to sanction further transfers from the Madras Corps.

The Sappers will be one-half Burmans, one-quarter Kachins and Karens, and one-quarter Shans; all should be fairly skilled artificers; they will receive the same rates of pay as the Sapper artificers of the Bengal Corps. They will be enlisted for five years, after which they can claim their discharge. After seven years approved service, their regimental pay will be increased by Re. 1 per mensem, and after 12 years approved service by Rs. 2 per mensem; these increments being in addition to all other emoluments, and being granted under the orders of H.E. the C-in-C. in Madras. No pensions will be granted to Sappers on discharge, but the Native officers, and N.C.O.s, whether transferred from India or enlisted in Burma, will receive pensions according to the system in force in the Madras Corps.

The N.O.s, N.C.O.s, and men will draw free rations when they are granted to other troops with whom they may be serving.

In G. of I. letter No. 1668 of 26-10-1887, sanction was accorded for the families of the men to live in the Lines, and the minimum standard of height for Burmans was fixed at 5' 4", or in exceptional cases 5' 3".

The enlistment of recruits up to 30 years of age was sanctioned in G. of I. letter No. 283 A of 4-2-1888.

I.A.C. 164 of 31-10-1888 revised the composition and working pay of the company as follows:—

The Sappers will consist of Burmans, Shans, Kachins and Karens, and at least one-half of the men enlisted should be fairly skilled artificers. Men enlisted as artificers, to receive the same rates of working pay as the Sapper artificers of the Bengal Corps. Men enlisted as ordinary Sappers, will, until they qualify as artificers, receive working pay at the 1st rate under the rules generally applicable to Native ranks in the Corps of Sappers and Miners.

G. of I. letter 416 A dated 11-2-1889 sanctioned the inclusion in the establishment of an interpreter, to be eventually replaced by three qualified Sappers.

The standard of height for recruits was fixed at 5' 3", or with exceptionally good workmen, at 5' 2", under G. of I. orders dated February 1891.

The Native officers were appointed from 30th August and 2nd September 1887, and the first Sapper was enlisted in October, but during the remainder of that year only 15 recruits in all were obtained; 108 men were enlisted in 1888, and the company reached full strength for the first time in October 1890.

The Shans and Kachins were not found to enlist, and in May 1892 the composition of the company was 31 Karens and 125 Burmans.

Under I.A.C. 91 of 15th June 1893, the Burma company of Sappers and Miners was placed on a permanent footing, as an integral part of the Corps of Madras Sappers and Miners, two R.E. officers being added to the peace establishment of the Corps on that account. In other respects, the company to be maintained and equipped, as before.

In letter No. N.A. 273 dated 13-2-1894, from the A.G. of the Madras Army, it was laid down that:—

- (a). The O.C. Burma company should be allowed to recruit as before, without any reference to Corps H.Q. at Bangalore.



- (b). He should be able to discharge unattested recruits, and apply for the discharge of men of bad character, without reference to Corps H.Q.
- (c). He should be able to promote men in their trades, without waiting for a Corps Order from Bangalore.
- (d). Confidential reports on Burman N.C.O.s, only to be sent to the Commandant of the Corps, in so far as their promotion would affect the position of the Madras N.C.O.s serving with the company.
- (e). A monthly report to be sent to the Adjutant of the Corps showing the enlistments, discharges, and promotions that had taken place.
- (f). References to Higher Authorities, to go to the G.O.C. Mandalay District, whence they would be forwarded with his remarks to the Commandant, who would endorse them and send them on.

But the Government of India refused to allow the Commandant to go over to Burma to inspect the company.

In letter No. 1125 C dated 16th May 1903 from the Secretary to the Governor of India, Military Department, to the A.G. in India, sanction was granted to the inspection of the Burma Company biennially by the Commandant, and the Chief Engineer of the Madras Command, alternately.

Establishment.—Under S.G.O. 33 dated 12-8-1887, the following 1887. additional followers were sanctioned per company:—

When the number of men messing together is—					
not less than 30 but under 60		1	cook		
"	60	"	90	2	"
"	90	"	120	3	" 1 bhisti
over	120	"	4	"	2 "

Musketry.—The following were the Corps results at the 1887 S.I.R.A. Meeting:—

B.T. Running Contest, 2nd out of 22 teams.

Three Officers and N.C.O.s fired in the winning team of British Army versus the Volunteers.

Revolver Stakes	1st
Secretary's Prize	1st
N.T. Ohdewala Stakes, 400 and 500 yards	2nd
Dewan's Prize	2nd
C-in-C.s Prize	1st
Victoria Plate, 500 yards	1st
ditto. 400 and 500 yards aggregate	1st & W.I.R.A. Medal.
Maharajah of Mysore's Plate, 600 and 700 yards	1st & H.R.A. Medal.
Native St. Ledger, 600 yards	1st
Championship	1st, 2nd, 3rd, and 4th.
Nursery Stakes, 200 yards	1st
Bugle Stakes	1st
Daily Prize Cup	1st
N.O. Revolver Prize	1st
Scurry Stakes	1st

Operations in Burma, 1887-89.—On 1st April 1887, the following companies were in Burma:—

No. 1 company, but it moved to Bangalore in the following May.

No. 2 company, having just arrived from Bangalore.

And No. 5 company reached Burma in January 1888.

The following officers were engaged:—

Captain H. E. Goodwyn, D.S.O.	Lieut. W. Ewbank
Lieut. G. Palmer, (died of wounds)	„ L. P. Chapman
„ J. A. Dealy, (invalided)	„ J. A. S. Tulloch
„ H. B. H. Wright	„ C. H. Heycock
„ C. H. Roe	„ B. A. James.

1888. The Corps took part in the expedition to the Chin Hills, in November 1888, and in the Karenni Expedition in December of the same year, besides being employed on various small expeditions and affairs.

In November 1888, Lieut. Palmer and 60 of all ranks, No. 2 company, left Mandalay to join the Chin Field Force; No. 1 Stockade was completed at Kambale, and 6 miles of road having been cleared from there to the foot of the hills, the Sappers and 40 rifles of 42nd Gurkhas moved out to establish No. 2 Stockade, and at this place Lieut. Palmer was mortally wounded on 7th December by some Chins lying in ambuscade. Several skirmishes took place before the force was established at No. 2 Stockade, and on 25th December firing continued for some hours; Naick Chinnasamy was specially commended on this occasion by the officer commanding the covering party of Gurkhas, for the courage and coolness he displayed. Lieut. Tulloch who had succeeded to the temporary command of the company, joined at No. 2 Stockade on 26th December, and Lieut. Wright took over the permanent command about a month later. On 30th December Lieut. James joined the force with the 43 rifles of No. 2 company, and 14 rifles of the Burma Sappers.

1889. No. 3 Stockade was commenced on 16th January, and No. 4 Stockade on 31st idem. On 4th February the company moved with the column to Siyin, which was reached the same day after some skirmishing; from there they were employed on the road over the ridge at No. 5 Stockade, and returned to Fort White (near Siyin) on 24th, having completed the track.

The company remained in the Chin Hills until November 1889, and reached Bangalore in April 1890. During the three years in Burma, the losses were:—

One officer and 1 Sapper killed; 1 Sapper wounded.

38 N.C.O.s and men died; 71 N.C.O.s and men invalided.

Extract from letter from Brigadier-General G. B. Wolseley, C.B., A.D.C., Commanding 1st Brigade, Upper Burma Field Force, to the Assistant Adjutant and Quarter-Master General, Upper Burma Field Force, (No. 90 C.-Field Operation Report, dated Mandalay, 29th March 1888.)

In compliance with your memorandum No. 14 B-C, dated the 10th instant, I beg to submit the names of the following officers who, in my opinion, are deserving of some recognition for service in the field, etc.,

1. My staff officers, Captain A. B. Fenton, Brigade-Major, Captain G. W. Deane, Deputy Assistant Adjutant and Quarter-Master General, and Lieut. J. A. S. Tulloch, orderly officer; the two former for the commendable way in which they have carried out the duties of their respective offices, and the latter, not only as my orderly officer, but also for the good work done by him in road sketching and intelligence work in the Brigade.

Extract from letter No 305—C.F., dated Fort White, 25th April 1889.

From

Brigadier-General E. Faunce, Commanding Chin Field Force.

To

The District Staff Officer, Burma District.

I have the honour to acknowledge the receipt of your telegram No. 1889. 1889.
175 directing me to submit detailed reports of the operations of the Chin Field Force.

* * * * *

6. On the 26th December Lieut. Tulloch, R.E., arrived to command the detachment No. 2 company Queen's Own Sappers and Miners.

* * * * *

13. The services of Lieut. H. B. H. Wright, R.E., company commander and Lieut. Tulloch, R.E., company officer No. 2 company Queen's Own Sappers and Miners, have been invaluable to the force—first making stockades where required, in clearing and making a track on the hills 22½ miles long, without which mules could not possibly have reached this, and without mule transport the force, which had no other, could not have done so, and again in the construction of the post Fort White now occupied. The want of tools and nails has added greatly to the labour of construction and necessarily caused delay, and I consider very great credit indeed is due to Lieut. Wright, ably assisted by Lieutenant Tulloch, that, in view of the difficulties he has had to contend with, he should by his unsparing energy, his good organisation of large working parties, and his own readiness and resource, have been able in less than a month after the ground had been cleared of the thick jungle which covered it, to almost complete the accommodation required for 1150 troops, hospital, commissariat godowns, magazines, followers' lines, &c.

Extract from Chin Field Force Order No. 458, by Brigadier-General E. Faunce, dated Camp Fort White, 6-5-1889:—

Before leaving these Hills, I desire to thank you officers and men of the Force, for the cheerful soldierlike spirit in which the constant exposure, the long continued and exceptionally hard work of the last five months have been undergone by one and all.

So long ago as 8th February, you were told by the very distinguished and experienced soldier after whom this post is named, that the necessities of the operations even up to then, had subjected the force taking part in them, to more than the ordinary difficulties of active service in our Eastern Empire. Since then, the work has been harder, and the enemy have stood even more pluckily, and the country you have worked over has been much more difficult; you have had to climb up the sides of almost precipitous hills and it often looked as if you would barely reach the top to lie down there; but if on getting to the top, the smallest chance of closing with or overtaking the enemy presented itself, each officer and man dashed forward, as if he had not seen a hill for a week. On one occasion when we bivouacked at 9000 feet just below the crest of a hill where no water was available, and for food had only the little we could carry, I was especially struck by the bright cheery spirit in which after a hard day's work, the discomforts of the night, added to by a biting cold wind, were borne by all.

* * * * *

No. 2 company "Q.O." Sappers and Miners have had a full share of the exposure, and more than a full share of the work, to mention only the making of a mule track from the plains as we advanced, and to their skill and hard work, under the able and energetic direction of Lieut. Wright, R.E., we are indebted for the construction, in less than a working month, of accommodation for 700 men besides followers.

Extract from despatch dated 6-7-1889 from Major-General Sir George White, K.C.B., V.C. :—

1889. Lieut. H. B. H. Wright, R.E., was senior officer of the R.E. in the advance to Siyin in the Chin Hills, and rendered invaluable service in roadmaking, in the erection of stockades, and eventually in providing accommodation for 1150 troops, with followers etc., at Tokhlaing (Fort White).

Extract from Myingyan District Orders No. 2 by Brigadier-General W. P. Symons, Commanding, dated Camp Kalembo, 21-10-1889:—

“No. 2 company “Q. O.” Sappers and Miners being about to leave the Chin Hills for Mandalay, the G.O.C. Myingyan District, while regretting the loss of their services, is much pleased to publish a farewell order, thanking them warmly for their hard and useful work, which has now extended in the command for the last 10 months. It is altogether due to the Madras Sappers that the troops have been able to remain at Fort White during the past rains. This result was accomplished by incessant labour on mountain paths, buildings, and defensive works; all of which had the able direction of Lieut. H. B. H. Wright, R.E., Commanding No. 2 company, to whom the greatest credit is due for their initiation and construction.

No works of this kind can be carried out in a trying climate, and in an inhospitable country, without heavy losses from sickness. Since the 28th December last, out of a total strength of 163 of all ranks, Lieut. Palmer and 1 Sapper have been killed by the enemy, 1 Sapper has been wounded, 8 Sappers have died, and 37 Sappers have been invalided. At one time during the rains, 64 per cent. of the men were on the sick report. The Brigadier-General trusts that the company will now get rest, and soon be recruited to its full strength and vigour. General Symons has long known and appreciated the Madras Sapper. His capabilities in construction, and endurance have been severely tested in the Chin Field Force, and all ranks of No. 2 company have stood the test right well. It will rejoin Head-Quarters at Bangalore with the General's best wishes.”

1888. Lieut. Heycock and 25 men of No. 5 company accompanied General Collett's Karenni expedition in December 1888; the chief work performed by this detachment was making rafts to convey the force across the Salween, General Collett spoke highly of the services of the detachment, and Lieut. Heycock was mentioned in despatches.

Captain E. W. Cotter with three Native Officers, six Havildars, ten Naicks, and two Buglers, reached Mandalay on 23rd September 1887, to raise the newly sanctioned Burma Company of Sappers and Miners. Lieut. J. W. McElhinny of the Bombay S. & M., was appointed the Company Officer.

1889. Lieut. B. A. James, (who had replaced Lieut. McElhinny) with one Native Officer and 14 rank and file served with the Chin Field Force from December 1888 to April 1889; they were employed on road and building work, and were present at the action of 27th January 1889, when one of the Sappers had the stock of his carbine shot away.

Captain E. S. Hill with one Native Officer and 58 N.C.O's. and men of the Burma Sappers accompanied the Ponkhan Field Force in the Kachin Hills from 14th April to 16th May 1889. One Sapper was mortally wounded in action at Kerman on 18th April.

1888. **Soldier Clerks.**—S.G.O. 3 of 13-1-1888 laid down the following rules for the employment of soldier clerks in the regimental staff, and company offices of the Corps:—

Adjutant's Office—1	Head Clerk	@	Rs. 15
	--2 First Assistant Clerks	@	" 10
Qr.-Mr's. Office	—1 First Assistant Clerk	@	" 10
	—1 Second Assistant Clerk	@	" 7
Company Office	—1 First Assistant Clerk	@	" 10
	—1 Second Assistant Clerk	@	" 7

1888.

The employment of probationary clerks to be encouraged.

Head clerks to vacate, and serve in their companies 1 year before they can be promoted to the commissioned ranks. Assistant clerks to vacate on promotion to havildar, but to be eligible after 6 months duty as havildar, for appointment as Head Clerk.

Officers and N.C.O.s.—S.G.O. 6 dated 20-1-1888 laid down the relative position of Native officers, and R.E. N.C.O.s. as follows—

i. When Sappers and Miners are employed on duties of a purely military nature, the senior Native officer will assume command should no British officer be present.

ii. When employed on duties of an engineering or technical nature, the senior R.E. N.C.O. will take charge of the work, the senior Native officer, if any are present, remaining in military command of the party.

iii. On field service, etc., when the duties may be partly military, and partly technical, the command will be assumed, in the absence of a British officer, by the senior Native officer, the professional direction of the men at work resting with the senior R.E. N.C.O. present.

School.—Under S.G.O. 40 of 6-7-1888, candidates for the post of Native Army Schoolmaster in the Madras Army were sent for 1 year's training to the Q. O. S. & M. school, and this continued until 1900.

Musketry.—The course laid down in 1884 was altered as follows by G.O.C.C. India, dated 16-4-1888:—

The classification was raised to—

Marksmen 110 points; 1st Class 90 points; 2nd Class 75 points.

The volleys at 400 yards were to be fired in close order, with bayonets fixed, the front rank kneeling or sitting.

The number of rounds for Independent firing was reduced to 6, 2 to be fired lying, 2 kneeling, and 2 standing, whilst the advances were increased from 30 to 40 paces.

Six rounds to be fired both at a moving and a vanishing target at a range of 150 yards; 2 rounds standing, 2 kneeling, and 2 lying down, the target not to exceed 213.6 square inches, but this was altered in the following October to 288 for the moving target and 324 for the vanishing target.

Ten rounds for Attack practice from 600 to 150 yards was introduced; 12 rounds were allowed for company field firing, and 10 rounds for Corps or Brigade field firing. The sitting position was optional in any practices in lieu of kneeling.

This course was again altered in April and August 1889 as follows: 1889.

INDIVIDUAL.

5 rounds at 150 yards, standing	3rd class target.
5 " 300 " kneeling or sitting,	3rd class target.
5 " 500 " lying,	2nd class target.
5 " 500 " sitting,	2nd class target.
10 " 600 " any military position	1st class target.

Qualification for Marksman—M.H. rifle 80 points, Snider carbine 65.

" 1st	" 70	"	50.
" 2nd	" 50	"	35.

3rd class shots to repeat all Individual practices, and to carry out the volleys with blanks.

1889.

SECTIONAL.

5 rounds at 600 yards, volleys, lying, at target 5 feet by 12 feet.

5 " 500 " " " "

5 " 400 " " " "

5 " 250 " rapid volleys, in 75 seconds, sitting, at target
2½ feet by 8 feet.

The allowance for ammunition was—

Individual	...	...	...	30 rounds.
Collective	...	...	...	20 "
Commandants' Allowance	...	...	...	50 "
Regimental or Brigade Field Firing	...	...	...	10 "
Total	...	...	...	110 "

Prize money was granted at the rate of 5 annas per man exercised, to be distributed under the orders of the Commandant, one-half for Individual practices and one-half for Sectional. This had not been allowed for Sappers previously.

The Commandant's allowance of ammunition was ordered to be expended as follows (C.O. 410 of 1889):—

5 rounds at moving target.

5 " vanishing target.

10 " attack practice on the range.

10 " company field firing.

20 " further instruction of bad shots etc.

The annual course for the year 1889--90 was carried out by Nos. 1, 3, and 4 companies with the M.H. rifle and by Nos. 2, 6, "A" and "B" companies with the Snider carbine.

The following were the Corps results at the S.I.R.A. Meetings of 1888 and 1889:—

1888—B.T. Bangalore Cup, 2nd out of eight, losing by 1 point only.

C.-in-C.s Prize, 1st

Prince of Wales' Prize, 800 yards 1st

" " 900 " 1st

" " Aggregate 1st & B.P.R.A. Medal.

N.T. Victoria Plate, 400 yards 1st

" 500 " 1st

" Aggregate 1st & W.I.R.A. Medal.

Maharajah of Mysore's

Prize, 700 yards 1st

" " 600 & 700 " 1st & H.R.A. Medal.

Native St. Leger, 600 " 1st

Agram Stakes, 700 " 1st

Championship, 2nd, 3rd, 4th, 5th, and 6th.

Nursery Stakes, 400 yards 1st

Bugle Stakes, 1st

Scurry Stakes, 1st

Travancore Stakes, 2nd class shots 1st

" " 3rd " 1st

Cubbon Cup, 1st

Dewan's Prize, 2nd

C.-in-C.s Prize, two coys. tied with 12th M.I. for 1st.

1889—B.T. Championship, 2nd & S.I.R.A. Medal

S.I.R.A. Stakes, 500 and 600 yards 1st

Three officers and N.C.O.s fired in the winning team of
the British Army versus the Volunteers.

Officers' Prize, 1st

Secretary's Prize, Major Wilkieson and Sergt.-Major
Reader tied for 1st with six others.

Zulu Stakes, Major Wilkieson, Lieut. Dunsterville and 1889.
Sergt.-Major Reader tied for 1st.

N.T. Ohdewala Stakes		1st
C.-in-C.s Prize		2nd
Victoria Plate,	400 yards	1st
"	500 "	1st
"	Aggregate	1st
Native St. Leger,	600 yards	1st
Daily Prize Plate		1st
Afghan Stakes, two N.O.s tied for 1st		

Employment.—A section of No. 4 company was sent to Ootacamund in 1889 to construct a saluting battery, and on its return in April 1890, the Quarter-Master General of the Madras Army wrote:—"The Sappers have carried out the work of the construction of the battery and magazine in a very satisfactory manner, and great credit is due to the Native officer (Jemadar Ramasami). The conduct of all ranks during their stay at Ootacamund has been exemplary."

In November 1889, 1 Native officer and 12 Signallers were sent to Mysore to establish communication between that place and the Kheddahs, during the visit of H.R.H. Prince Albert Victor; this party was most favourably reported on.

Trades.—In March 1889, visual Signalling was introduced as a Sapper Trade, but all signalling equipment with a Sapper company was abolished in 1897.

At the end of 1889 there were 44 men of over 1½ years' service who had not passed in a trade, this was mainly due to 2 companies being on field service in Burma, where it was necessary to keep them up to strength, but the men had little opportunity of working at their trades.

Mules.—Under I.A.C. 183 of November 1889, 25 mules were allotted to each of the 2 companies detailed for the 1st Army Corps; and during the year 60 mules were received from the Transport Corps; 5 Duffadars and 57 Muleteers being transferred with them.

Lines.—Under S.G.O. 71 of 6-12-1889, only the following families were allowed to live in the lines:—

The families of all Native Officers, full N.C.O.s, and Buglers, and one third of the Sappers. Families at that time occupying huts in the lines, for whom accommodation existed, were not however to be affected by this order. This was amended by G. of I. M.D. No. 540 C. of 29-2-1904 to read:—

At the Head-Quarters of the Corps, the families of all Native Officers, and N.C.O.s, and 33⅓% of the Sappers will be allowed to reside in the Lines, but on detachment only the families of Native Officers, N.C.O.s, and 15 Sappers. The term family to include wife and children only, other relations not to be allowed to live in the Lines.

From 1-1-1889, the Lines at Bangalore and Secunderabad were taken over from the men (who had previously had to buy their huts) as Corps property, and compensation was paid by the Hutting Fund to each man's estate as follows:—From the amount that each man had already paid on enlistment or promotion, Rs. 2 for Native officers, and Re. 1 for all others was deducted for each year or part of a year that the individual had occupied Corps Lines at Bangalore, and the balance was paid to his estate on his becoming a casualty. From that date onwards, each officer or man paid rent to the Corps Hutting Fund, when occupying any lines belonging to the Corps. In this year No. 3 company commenced the reconstruction of the detachment lines at Secunderabad, which were in a very ruinous condition, and this work was continued by successive companies, until it was completed in 1902. One block of mule stables was built at Bangalore during the year, and

1889. the second block commenced, the latter being completed in 1890.

Chin Lushai Field Force, 1889-90.—No. 5 company was with the Northern column which operated from Fort White, whilst No. 6 company and the Burma company formed part of the Southern column which advanced from Kan to operate in the Baungshe Chin country.

No. 6 company under Captain H. G. C. Swayne, with Lieuts. Evans, Hutton, and Ainslie joined the rendezvous of the southern column at Pakoko on 18th November. The column advanced from there 165 miles to Kan by successive detachments of 200 men, No. 6 company heading the advance on 23rd November, with the Head-Quarters of the column; they reached Kan on 7th December, and two days later moved out, with an infantry escort, to commence work on the road to Yokwa and Haka. Before the expedition started, it was believed that the southern column would be able to reach Haka in 10 or 12 days from Kan, but the country was so hilly and broken, that with the whole strength of the force devoted to making the road 64 miles in length, it took the head of the column 66 days, and the mule road 77 days to reach Haka. In the valley of the Laungut, the road crossed the stream 43 times, and it was 23rd December before the hills were fairly entered, and the first resistance met.

Captain Swayne and Lieut. Hutton remained sick at Chaungkwa on 18th December and were invalidated from there, malaria being very prevalent so long as the column remained in the valley of the Laungut.

1890. At the beginning of January the average daily number of sick in the company was 35, and 7 Sappers had been sent back sick from Chaungkwa. After that, the advance having brought them up to a height of 4000' the malaria decreased, but the men were so saturated with it that 11 more men were sent back, and the sick rate was still about 30 per diem. Faron camp was reached on 12th January, and from there 7 more men were sent back sick. Lieut. James was attached to the company in January, rejoining the Burma company in June. Lieuts. Johnson and Marshall joined the company at camp Mingnu on 19th February, and Haka was reached on 22nd February. Lieut. Ainslie and 30 men accompanied the column which marched from Haka to join hands with the northern column at Tashon Ywama, and this column returned to Haka on the 17th March.

Lieut. James with 74 of all ranks of the Burma company had left Mandalay in September 1889 for the Kale Valley, where they were employed in building posts; in November, 1 Native officer and 14 men joined them, and they moved later on to the Kan-Haka road for work, and up to Haka.

No. 6 company, less a detachment of 25 men under Lieut. Ainslie which remained at Haka, and the Burma company left Haka on 27th April, and reaching Kan on 14th May arrived at Pakoko on 5th June. Malaria was very bad on the return march, and on one day half the men were sick. The length of mule track that had been constructed during the expedition was 64 miles; besides this, the post of Haka had been constructed with aid of 40 Burma Sappers, (who had arrived under Captain Hill about the middle of March), and any other labour that could be obtained, as also sheds at the various halting places en route to the plains.

Captain Swayne, and Lieuts. Evans and Hutton were invalidated.

Extract from despatch by Brigadier-General Symons, May 1890:—

“The discipline and behaviour of the troops throughout have been exemplary, No. 6 company Madras Sappers and Miners did continuous and arduous work, both on the roads and in building the post at Haka,

their services have been very valuable. Between November 15th and April 30th, the company lost through sickness, 3 officers and 72 men. 1890.

The Burma company, Queen's Own Madras Sappers and Miners also did good work in the Kale Valley, and at Haka. It has established its *raison d'être*."

Reorganisation of the Telegraph Sections.—Under I.A.C. 16, dated 22-1-1890, the telegraph equipment with the Corps, other than instructional equipment, was handed over to the telegraph department; it being ordered that in future expeditions, the civil telegraph department will make all arrangements for the supply of telegraphs with the army, using either civil establishments, or the Sapper establishments of officers, N.C.Os. and men, that had been attached to the telegraph department from time to time for training.

Two sub-divisions of telegraphs north of the Ravi, to be in future entirely worked by Sappers, the following number of officers and men being placed at the disposal of the D.G. of telegraphs for the purpose:—

2 British officers.
3 British N.C.Os.
3 Havildars.
3 Naicks.
18 Sappers.

The first detachment to be sent, to consist of one British officer and two-thirds of the strength given above; at the end of six months another British officer and one-third of the strength given above will be sent for instruction. A third British officer will be sent at the end of 12 months. At the end of 18 months (subsequently altered to two years, under I.A.C. 72 of 1-6-1899) the first officer will leave, and another officer with one-third of the strength given above will join. Every six months subsequently, one officer and one squad will be relieved.

To supply the reliefs and keep up a reserve for contingencies, B.N.C.Os. and native ranks sufficient to furnish ten squads for instruction, will be retained at the Head-Quarters of the three Sapper Corps, the present establishment being proportionately reduced, thus—

	Present.	Future.
B.N.C.Os	20	10
Havildars	5	10
Naicks	7	10
Sappers	80	60

Of these ten squads, four are allotted to the Q. O. Sappers & Miners, giving four telegraph sections to "A" Co., with a strength of—

B.N.C.Os.	...	...	4
Havildars	...	...	4
Naicks	...	...	4
Sappers	...	...	24

(I.A.C. 152 of 1890)

Each officer undergoing instruction will serve for 18 months, (subsequently extended under I.A.C. 72 of 1-6-1899 to 2 years) in the Telegraph Department, and if he desires it, will be graded and paid as a Supernumerary Asst. Engineer in the M.W.D.; a company commander being graded as a 1st grade, and a company officer as a 2nd grade Asst. Engineer. At the end of his tour of duty, he can revert to his original appointment in the Sappers, or join the M.W.D. or P.W.D. with his departmental grading, for absorption in the department. If the officer chooses departmental employ his place will be filled up in the Sapper Corps, but not otherwise, and no officiating appointments as Company Commander, or Company Officer will be made in the Corps to replace officers detailed for telegraph duty under this scheme.

1890. N.C.O.s. and men employed on this course, will draw their usual pay and allowances, plus the following:--

25 or 50 % working pay according to class.

25 to 50 % on Engineer pay of B.N.C.O.s.

this extra grant will depend entirely on proficiency in telegraph work.

Under this order, Lieut. G. D. Close with 1 B.N.C.O. and 8 N.C.O.s. and men proceeded to Ambala for training.

The officers who have gone through this course of instruction are:—

Lieut. G. D. Close	1890-91	Lieut. W. Robertson	1896-98
" B. H. Rooke	1891-93	" S. G. Loch	1898-00
" W. S. Traill	1893-94	" F. H. Bushell	1900-02
" J. B. Barstow	1894-96	" W. E. Kidner	1905-07

Appointment.—The appointment of 2nd-in-command was abolished under I.A.C. 60 of 31-3-1890.

Designation of Companies.—In September 1890, an order was issued that companies were to be called 1st, 2nd, etc., and not No. 1, No. 2, etc., (C.O. 259 of 1890).

Officers.—In October 1890, Colonel A. F. Hamilton was appointed to command the Rangoon Brigade with the rank of Brigadier-General; He had served in the Corps continuously for 28 years, having been Adjutant for nearly 15 years, and Commandant for over 6½.

During 1890, the M.W.D. was extended to the Madras Presidency, and thereafter this department became the normal employment for R.E. officers, instead of the Sappers and Miners which Engineer officers posted to this Presidency, had joined on first arrival in India, since 15-2-1838.

Lines.—Work was carried on by the Burma Sappers on their lines from the time that the company returned to Mandalay in June 1890; but the bulk of the company left Mandalay again in November for road work and building posts in the southern Chin Hills, and thereafter, the work on the lines was almost stopped.

Trades.—At the end of 1890, the number of men of over 1½ years' service who had no trade qualifications, had been reduced to 23.

Musketry.—The following were the Corps results in the S.I.R.A. meetings of 1890 and 1891:—

1891.	1890—B.T. Championship		2nd and S.I.R.A. Medal
	Officers' Plate 200 and 500 yards		2nd
	Mysore Stakes, 500 and 600 yards		1st
	N.T. C.-in-C.s. Prize	Tied for	1st
	Afghan Stakes, revolver		1st
	Assaye Prize		2nd
	Rifle and Spade contest		1st
	Cochin Prize		1st
	1891—B.T. Rifle Oaks, 500 yards		1st
	Empress Plate, 300 yards		1st
	3 N.C.O.s. fired in the British Army team which was captained by Major Wilkieson, and won the Challenge Plate against the Volunteers.		
	Zulu Stakes		1st
	N.T. Cubbon Cup		2nd
	Dewan's Prize		2nd
	C.-in-C.s. Prize	1st, 2nd, 3rd, and 4th	
	Assaye Prize	1st, 2nd, 3rd, and 4th	
	Long Range Stakes—2 company teams tied with 13th M.I. for 1st		

Operations in the Chin Hills, 1891.—On 30th December 1890, the Burma company 116 strong, under Lieut. T. Harrison with Lieut. James, reached Haka from Mandalay. Lieut. James was killed

at the assault of Thetta on the 2nd January, whilst accompanying a punitive column as Intelligence Officer. In March the company moved to Rawvan, where a post was built for 100 rifles; and in May they moved down the Kale Valley and thence up to No. 3 Stockade, which they rebuilt. 1891.

The 1st company moved to the Chin Hills in December 1890, and in March 1891, Lieut. Roe accompanied the northern column from Fort White, which moved to Tashon Ywama to meet a column from Haka.

Wuntho Expedition.—In February, detachments of 50 men of 5th company joined each of the two Wuntho columns, starting from Katha and Htigyaing.

The detachment with the Katha column was under the command of Jemadar Sarungapani, and that with the Htigyaing column was under Lieut. Chapman. There was not much work to be done with either of the columns, and on 22nd April they both arrived at Mandalay. The Htigyaing detachment at one time covered 45 miles in 36 hours, including altogether eight hours' halt.

Lieut. Chapman and the detachment were favourably mentioned in Brigadier-General Wolseley's despatches. (G.G.O. 985, of 16-10-91).

Hazara Expedition.—The telegraph detachment of one B.N.C.O. and eight N.C.O.'s. and men under Lieut. G. D. Close, joined the 1st Brigade of the Hazara Field Force at Darband on 22nd February. The Head-Quarters, of the force as it advanced, were kept in telegraphic communication with the base throughout the campaign. The detachment returned to Rawal Pindi on 20th May.

Extract from despatch of Major-General Elles, C.B., Commanding the Hazara Field Force:—

"The whole detachment (telegraph) worked so admirably that it is almost invidious to make a distinction among its members x x x x x x x x x x Mr. Thomas and Lieut. Close have both done very good service, and the Madras Sappers have worked well."

In August 1891, Lieut. T. Fraser was attached to No. 4 company of the Bengal Sappers for field service in Hazara, and he commanded the company from 18th September, till he rejoined his own Corps in December.

Organisation.—The Submarine Mining detachment, furnished hitherto by "A" company, was embodied into a separate Corps under I.A.C. 159 of 15th October 1891, and "A" company was consequently reduced as follows under I.A.C. clause 173 of 1st November 1891:—

B.N.C.O.s	from 22	to 14	allowing for
Jemadars	2	1	2 Pontoon Sections
Naicks	10	8	4 Telegraph Sections
Sappers	150	102	2 Field Printing, etc., Sections.
Buglers	2	1	

but the number of Havildars was increased from 6 to 7; this gave the following establishment of B.N.C.O.s in the Corps:—

1	Sergeant-Major	
1	Quartermaster-Sergeant	
1	Company Sergt-Major R.E.	
4	Company Sergt-Majors	Including 1 C.S.M., 1 Sergeant, and 1 Corporal with 3 Burma Sappers and Miners.
7	Sergeants	
10	Corporals	
9	Second-Corporals	

"K" company R.E. was abolished on 31-3-1891, and all B.N.C.O.s belonged thereafter to "H" company, the Head-Quarters of which were at Simla. (I.A.C. 76 of 1891).

1891. **Employment.**—1st, and 6th companies and the Burma Sappers were employed for a part of the year in roadwork, and post building in the Chin Hills.

The 1st and 4th companies moved to Assam in October 1891, for contract work on the Nichuguard Manipur road, where they remained till March in the following year.

Extracts from reports by Mr. Watts, the Superintendent of Works. "The work done per man per diem was most satisfactory, and I look on one Sapper as worth at least two ordinary labourers.

1st company had by far the most difficult and dangerous work to do, in blasting the treacherous overhanging shaly rock which predominated in the section undertaken by this company. The men drilling the holes for blasting had to be tied on to the trees with ropes. 4th company erected seven timber bridges aggregating 690' in length, the largest being built on crib piers filled with boulders. The work executed by this company was by far the neatest in the gorge."

Musketry.—The time allowed for rapid volleys was reduced in 1891 from 75 to 60 seconds.

Arms.—By December 1891 the whole of the Corps had been rearmed with Mark II. Martini Henry rifles.

Lines.—The building of the Special Schools on the east side of the workshop enclosure was completed in November.

Twelve more mule stalls, and a gram boiling shed were built during the year.

The Girl's school was commenced.

Equipment.—The Government of India sanctioned the retention of lathes, carts, pit saws, etc., that were no longer in the equipment tables, on the understanding that they were in future to be maintained by the Corps. A portable steam engine was obtained for work in the shops.

Trades.—At the end of the year there were only 16 men of over 1½ year's service, who had not qualified in a trade.

1892. **Employment.**—1st and 4th companies were on the Nichuguard-Manipur road till March 1892, when they returned to Mandalay and Bangalore respectively.

3rd company moved to Assam in September to take up contract work on this road, and the company remained there till the end of March 1892.

4th company moved to Burma in October, and proceeded to the Chin Hills, for roadwork, etc., in November.

6th company was employed on the Sihaung Haka road, and in building posts there.

Lieut. Ainslie joined the Tlang Tlang column as Intelligence Officer on 30th January.

On 1st April Lieut. Ainslie was sent with 30 men to build a post at Falam; and on completion of this work the G.O.C. Burma issued an order that "It may be intimated to Lieut. Ainslie, R.E., that his exertions and able superintendence of the construction of the Falam post are fully appreciated by the G.O.C. Burma; the O.C. Falam is requested to be good enough to convey to the half company "Q. O." S. & M. that their hard work is appreciated by the Brigadier-General Commanding."

The H.Q. of the company returned to Mandalay in May, and moved to Bangalore in October; the Falam detachment did not leave that place till July. Lieut. Ainslie was again detached on Intelligence duty in October.

At the end of November 1891, 2nd Lieuts. Lubbock and Cumberlege joined the Burma company to bring it up to F.S. strength, and

early in December Lieut. Harrison the Company Commander with 55 officers and men proceeded to Bhamo to join the **Irrawady Column**; 2nd Lieut. Lubbock went to the same place for blasting work in the river. Lieut. Babington and 51 N.C.O.s and men started in January 1892 for Tatkon, to make a road up to Byingyee. Lieut. Harrison's detachment built a post at Sadon for 250 rifles and two guns, and Lieut. Harrison was commanding that post when it was attacked by Kachins and Chinamen from 7th to 20th February, during which Corporal Tonge and five Sappers were wounded, (two severely). 1892.

Extract from Mandalay District Orders by Brig.-General M. W. E. Gossett, dated 19-4-1892 :—

The four columns that have been in the field since December last having returned, the Brigadier-General Commanding takes the opportunity of thanking all ranks for the good work that has been accomplished, and the endurance and cheerful obedience shewn in carrying out important duties which involved considerable hardships.

x x x x x x

The defence of Sadon by Lieut. Harrison, R.E. x x are brilliant episodes which will always reflect great credit on those officers, and the men they commanded.

Extract from a letter dated 14-5-1892 from Lieut. Harrison, R.E., who commanded Sadon during the defence of that post.

I bring to notice the following B.N.C.O.s, Native officer, N.C.O.s and Bugler, who were in Sadon during severe attacks on the post by Chinamen, and Kachins; the behaviour of all was most excellent.

Corpl. F. C. Tonge—wounded when attempting to dislodge with a hand grenade, the enemy from behind some rocks which could not be flanked.

Jemadar Francis—rendered much assistance, improving the defences, and in signalling.

Havildar Muttusami—was very zealous, taking part in sorties, etc.

Havildar Madurai

Naick Murugesen

Bugler Francis.

The following extracts are made from General Orders by the Government of India, dated 28th October, 1892 :—

"The Government of India also cordially acknowledge the services rendered by the detachment under Lieut. T. Harrison, R.E., which gallantly defended the Sadon post against the repeated attacks of the Kachins. x x x
x x x and the gallant defence of the Sadon post by a handful of men under Lieut. T. Harrison, R.E., against repeated attacks by the Kachins are incidents that stand out prominently, and deserve special mention."

Lieut. T. Harrison R.E., received the Distinguished Service Order for his services on this occasion; and Sadon post was named Fort Harrison (Burma District order 19 of 9-6-92).

In March, a further detachment of 20 N.C.O.s and men joined the Irrawady Column, and were employed in constructing a suspension bridge across the Namli Kha, under Lieut. Lubbock, and in building a stockade for 50 rifles; they returned to Mandalay in May.

In his report No. 180 D of 7-6-1892, Major-General R. C. Stewart says :—"When the establishment of a post at Sadon became apparent, the problem of keeping open the communication with the Irrawady during the rains, was a source of much anxiety. This was ultimately solved by the construction of a suspension bridge over the Namli river, which was successfully accomplished in the face of many difficulties,

1892. and not without considerable loss of health to both First-Grade Officer G. A. Lye, Indian Marine, and Lieut. Lubbock, R.E. To carry out this work, every article used in the construction had to be brought from Mandalay, and transported from the Irrawady to the Namli on elephants, and there placed in position. I consider it a work which reflects the greatest credit on these officers, and deserving of special consideration."

The detachment under Lieut. Babington, completed 30 miles of mule road, built some rest houses, and surveyed the Byingee range, and returned to Mandalay in June.

Lines.—Work was continued on the lines at Secunderabad, and Mandalay; the Girls' School at Head-Quarters was completed, and 170' of the western boundary wall of the workshop enclosure built.

Mules.—Sufficient mules to completely equip 2 companies for field service, i.e. 138 per company, had been received by the end of 1892.

R.E. N.C.O.s.—The conditions of service for B.N.C.O.s serving with the Corps were improved by I.A.C. 181 dated 1st October 1892. Such rules to come into force from 1st July, 1892.

Men sent out to India must be:—

Of good character, with at least 4 years' service unexpired; except in special cases they should not be of higher rank than 2nd Corporal; they should be in possession of at least 3rd class certificates of education, and have undergone the full field works course at Chatham; they must be medically fit for service in India.

Unless of higher rank, they will be appointed Lance-Corporals from date of embarkation, and will be placed on the seniority roll of their Corps, so as to take their turn of promotion with the N.C.O.s at home and in the Colonies.

On arrival in India they will be appointed 2nd Corporals. After 1 year's service in India they will be eligible for promotion to Corporal, and after $2\frac{1}{2}$ years to Sergeant; such promotions to be irrespective of vacancies, provided the Commandant is satisfied that the man is fit and deserving of promotion.

They may thereafter receive local promotion up to the rank of Sergeant-Major (Warrant Officer) in the Sappers and Miners, with all the corresponding advantages of pay and pension if they complete their service in India.

If reduced to the ranks, they will, in the absence of good reasons to the contrary, be sent home by the 1st troopship under the orders of the C.-in-C.

Men appointed in India, to serve in India throughout their engagement, unless remanded on account of misconduct, as above, or transferred on account of ill-health.

An N.C.O. who completes his service in India to receive pension according to his local rank.

If they have not less than 4 years' service, they can be brought on the married roll when about to embark for India.

The pay and Engineer pay to be the same as at Home.

When serving with Sappers and Miners they are eligible for appointment in the P. or M.W.D., but before being permanently appointed they must pass a qualifying examination, and must also undergo a year's probation. When permanently appointed, if recommended, and they have 3 years' army service, they will be promoted to Sergeant on the unattached list, with effect from the date of completion of their probation. This qualifies them for advancement to Warrant Grades under Departmental rules.

Those in the Sappers and Miners who have re-engaged to complete 21 years' service will be eligible for 1 year's furlough after each completed 7 years' in India, and this rule is applicable to those who may extend beyond 21 years. 1892.

Musketry.—From 1st April 1892, the annual course was altered as follows:—

INDIVIDUAL.

7 rounds at 200 yards	Standing	Marksmen 55 points.
7 " 500 "	Sitting or Kneeling	1st Class 45 points.
7 " 600 "	Any position	2nd Class 35 points.

COLLECTIVE.

10 rounds, volleys, at 600 yards Lying.

5 " " 500 "	"
5 " " 500 "	Sitting, at a moving target.
5 rapid " 400 "	Sitting.

The moving target, vanishing target, and attack practice, from the Commandant's allowance of ammunition remained unchanged.

The Corps results at the S.I.R.A. Meeting in 1892 and 1893 were:—

1892—B.T. Rifle Guineas, 600 yards	1st
Martini Henry Plate, 200 yards	1st
The Corps supplied three of the Army team which fired for the Challenge Plate against the Volunteers.	
N.T. Championship	3rd and B.P.R.A. Medal.
Long Range Stakes	2nd
Afghan Stakes	1st

1893—B.T. The Hebbal Stakes	1st
The Corps supplied the Captain and two of the winning team for the British Army versus the Volunteers.	
Zulu Stakes	1st and 2nd
Soldiers' Prize, 300 yards	1st
N.T. Resident's Stakes, 300 yards	1st
Young Soldiers' Plate	1st
Maharajah of Mysore's Prize, 200 yards	1st
Dewan's Prize	1st and 2nd
Assaye Prize	2nd
Long Range Stakes	1st and 2nd

Arms and Equipment.—Up to May 1892, the Burma company had been armed with Snider carbines, and sword bayonets, but then received M.H. rifles, and in November of the same year they received the Mackenzie valise equipment.

Dress.—Under P.M.G. No. 918 of 9-2-1892, the substitution of knickerbockers and blue putties in lieu of trousers was sanctioned for the Burma company. The working dress of that company at that time consisted of a red and blue pahtso of Regimental pattern, worn under the khaki coat; and with a khaki gounghoung; several attempts were made to improve the headdress, by having it made up over a framework, but this was not approved of by the G.O.C. Burma.

Chargers.—Under S.G.O. 63 of 1892, Company Commanders and Company officers were restricted to pony chargers from 13.3 to 14.2 high.

Trades.—At the end of 1892, 120 men were not qualified in any trade, and of these 31 were over 1½ years' service; an increase of 15 in the 12 months.

Organisation.—In June 1893, the organisation of the company was altered from three Divisions to two half companies, as follows:— 1893.

1893.

Every company, (except "A") is to be divided into two half companies, each half company into two sections, and each section into two sub-sections.

The Subadar will command the complete company, Native ranks, and each Jemadar a half company. Each section will be commanded by a Havildar, and each sub-section by a Naick; the two remaining Naicks will command the sub-sections of the Equipment. The Colour and Pay or Instructor Havildars will not command sections, except in absence of one of the other Havildars.

A fair allotment of each trade to every section is the primary consideration, but the number of tradesmen should be equally divided between the half companies. (C.O. 208 of 26-6-1893).

In the same month the Burma company of Sappers and Miners was incorporated as an integral part of the Madras Sappers and Miners, two R.E. officers being added to the peace establishment of the Corps. (I.A.C. 91 of 1893).

Employment.—Owing to a water famine in Bangalore, the 3rd 5th, and 6th companies at Bangalore were temporarily employed in the early part of the year on the water supply of the station, and Major Grant, R.E., Executive Engineer of the Bangalore water works Division, wrote:—"I had often heard of your men, but it has not heretofore been my good fortune to work with them. I could wish for none better."

1st company moved to the Chin Hills from Mandalay, and was employed on preparing the site, and building the new Fort White, (the 3rd post of that name). From 12th to 24th March, Captain Roe and 30 men were with the Pimpi Column, which met with slight resistance at An-ngo. The company left Fort White in May, and was at Myingyan from June to October, when it returned to Bangalore. The 2nd company was at Secunderabad all the year, and continued the rebuilding of the lines there.

The 3rd company left Assam in March, and reaching Head-Quarters in April, moved to Burma in October; it reached Tiddim in the North Chin Hills in November, and was employed on buildings and roads.

At the commencement of the year the Head-Quarters of the 4th company were at Falam, and detachments were at Haka and Fort White. On 3rd January, Lieut. G. A. F. Sanders (1st company) took over the command of the detachment of 30 men at Fort White, and they accompanied the Nwengal Column, under Brigadier-General A. P. Palmer C.B., the work done being favourably mentioned as follows:—

Field Operations Burma.—G.G.O. 733, dated 4-8-1893.

The Most Honourable the Viceroy and Governor-General of India in Council is pleased to direct the publication of the subjoined correspondence, including a letter from A.G. in India, submitting under the orders of the C-in-C. in India, despatches received from the C-in-C. of the Madras Army, and the G.O.C. the Burma District, describing the Operations carried out in the Northern Chin Hills, during the cold season of 1892-1893.

X	X	X	X	X	X	X	X
10.	By the 2nd January 1893,	the new posts above referred to					
X	X	X	having been established in the Siyin				
30 men No. 4 company Madras			country and rationed up to end of the				
Sappers under Lieut. G. A. F.			month, I was able to start from Fort				
Sanders.			White with a force as per margin, to				
X	X	X	operate against the Nwengal tribe,				
			west of the Manipur river, our objective				
			being Kaptial, the chief town of the tribe, and the home of Twemtung,				

the chief implicated in the murder of the Myook, and who has been most prominent in inciting his own and the Siyin tribe to revolt. 1893.

x x x x x x x x x
19. x x x x I returned to the east of the Manipur river with the guns, x x x x. The river having slightly fallen had in the meantime been bridged by the Madras Sappers under Lieut. Sanders, R.E., a cleverly constructed cantilever bridge, partially suspended on twisted telegraph wire and rope, having been thrown across.

x x x x x x x x
15. Lieut. G. A. F. Sanders, R.E., commanded a detachment of No. 4 company at the crossing of the Manipur river, and afterwards supervised its bridging, by which the Nwengal force was able to recross on its withdrawal.

A clasp was granted for the operations in the Northern Chin Hills.

At the beginning of March the detachment of 4th company moved to Falam, and the Haka detachment arrived there in April; the company was principally employed on roads, bridges, and buildings.

On 25th February, Lieut. Babington, and 73 officers and men of the Burma company moved to Tiddim for work on buildings, and they returned to Mandalay in June. The building of the lines at Mandalay was pushed on as well as it could be, considering the few men available, and on the 6th December Lieut. Tulloch and 96 officers and men moved to Falam.

Lines.—A fodder shed was built in the mule lines at H.Q., and the boundary wall along St. John's Church road was commenced.

Trades.—At the end of 1893, 87 men had not passed in any trade, but only 22 of these were over 1½ years' service, an improvement on the previous year.

R.E. N.C.O.s.—Under I.A.C. 82 of 1893, an N.C.O. holding the rank of corporal on arrival in India, became eligible for promotion to the local rank of sergeant, after 18 months' approved service in the country.

Officers.—Havildar Hpo Ton, a Karen, was promoted to the commissioned ranks in the Burma company on 18-2-1893, the first Burman to receive a commission.

Dress.—A new headdress for wear with serge clothing was approved for the Burma company.

Pensions.—Were sanctioned under I.A.C. 180 of 1893, for the families of men of the Burma company who should die from wounds, accident, or sickness, when on field or foreign service.

Employment.—The 1st, 5th, and 6th companies were at Headquarters throughout 1894. 1894.

The 2nd company at Secunderabad continued the rebuilding of the Lines there, and also built a shed at the brickfield, and a limekiln.

The 3rd company was at Tiddim till 27th March, employed on roads and buildings, a half company under Lieut. Gillam constructing a 5' wide road from Dimlo to Kennedy Peak. The company reached Myingyan on 6th April, and leaving it again on 2nd November for Falam, was employed for the remainder of the year there, principally on brickmaking.

The 4th company at Falam was employed mainly on bridging, building, and brickmaking. In April it moved to Thayetmyo, and in October to Bangalore.

About two-thirds of the Burma company under Captain Tulloch was in the Chin Hills building sheds at No. 4 Stockade, working on the road between that place and Fort White, and also working on buildings,

1894. roads, and bridges, near New Falam; they reached Mandalay on 11th May. After reaching Mandalay, the company lines there were completed, and on 28th October Captain Tulloch moved with 100 men to the Chin Hills again, for bridging, and road work.

Lines.—It having been decided that only one company besides the Burma one was required in future in Burma, the 4th company returned to H.Q. without relief. This brought up the number of service companies at H.Q. to four, whilst the existing accommodation was only sufficient for three. It was decided therefore that additional Lines must be commenced on the Field Works Ground.

Twenty-two additional quarters were built at H.Q. and a vegetable bazaar was completed in the Lines; the boundary wall of the workshops on the north side was completed. The Lines of the Burma company were completed at Mandalay, and the rebuilding of the company lines at Secunderabad was carried on.

Equipment.—A certain amount of telephone equipment was received for the first time.

Musketry.—The trolly system of targets was introduced on the range at H.Q. to supersede the swing window type.

The following were the successes of the Corps at the S.I.R.A. Meeting:—

British.	Hebbal Stakes	1st
	Zulu Stakes	Tie for 1st
	Spencer and Cos. Prize, 600 yards	1st
	Inter-regimental Revolver Team	1st
Native.	N. Officers' Contest, 200 and 400 yards	1st
	Dewan's Prize	1st
	Long Range Stakes	1st
	Marlam & Cos. Prize	1st

Workshops, Equipment.—The lathes and bandsaw were connected up with the portable 5 H.P. engine obtained in 1891, thus saving much waste of trained labour that had had to be employed in turning the lathes by hand power.

Trades.—96 men had not passed in any trade at the end of the year, but of these 21 only were over 1½ years' service.

Sports.—In 1894, Lieut.-Colonel C. B. Wilkieson presented a Challenge Shield to be completed for by companies at the annual Athletic Sports; the winning companies have been:—

1894—"B"	Company, commanded by Lieut. C. H. Heycock			
1895—No. 4	"	"	" H. J. M. Marshall	
1897—No. 4	"	"	Capt. H. B. H. Wright	
1899—No. 1	"	"	Lieut. J. R. Chancellor	
1900—No. 3	"	"	Capt. J. A. S. Tulloch	
1903—No. 1	"	"	Major C. H. Roe	
1903—No. 1	"	"	Major C. H. Roe	
1904—No. 9	"	"	Lieut. C. M. Wagstaff	
1905—No. 10	"	"	" D. A. Graves	
1906 {	No. 12	"	Capt. J. R. White	} Tie.
	No. 14	"	" J. B. Barstow	
1907—No. 13	"	"	" F. D. Irvine	
1908—No. 13	"	"	" F. D. Irvine	
1909—No. 13	"	"	Lieut. T. P. Bassett	

1895. **Organisation.**—The strength of the 4 service companies, detailed for the 1st and 2nd Army Corps on mobilization, was increased by one Havildar, one Naick, 18 Drivers, and 18 mules per company. The Drivers to be enlisted under similar conditions to those in force for Drivers of Mountain Batteries.

Employment.—The 1st and 4th companies were at H.Q. 1895. throughout the year; the latter company commenced work on the new Lines to be built on the Field Works Ground.

The 2nd company was at Secunderabad till 28th November, when it marched for Bangalore. A new guard-room was built in the lines, and the rebuilding of the lines was continued.

The 3rd company was at Falam till 27th April, employed on building, brickmaking, and burning lime, whilst 16 men worked with the Burma company at the Manipur river suspension bridge. The company was at Thayetmyo during the rains, and reached Falam again on 19th November, where it carried out roadwork, bridging, building, and brickmaking.

The 5th company was at H.Q. till 20th September, when it moved to Malakand Camp, under Lieut. E. P. Johnson and Lieut. G. A. F. Sanders, and was joined at Naoshera on 1st October by Lieuts. Winsloe and Watling to complete it to F.S. strength. Malakand was reached on the 5th October, and dry stone barracks with a little mud to keep out the wind, were commenced. On 16th, 20 men moved to Chakdara for brickmaking, and other works carried out were one mile of mule track to Guides' Point, a piquet tower on the Point, a staff mess, etc.

Five mules were received by the company on 14th December.

On 4th April the 6th company was mobilized at Bangalore to join the **Chitral Relief Force**, and it left Bangalore on 6th under Lieut. C. Ainslie, and 2nd-Lieut. W. Robertson, and being joined en route by Lieuts. Winsloe and Hibbert, moved to Chakdara, where work was commenced on 23rd April on the permanent bridge over the Swat river; the company was assisted by civil labour, and later by a portion of the "A" company of the Bengal Sappers, and the bridge was opened for traffic in two months from the start.

The bridge consisted of—1 suspension span of 250'			
2 half	do.	125'	each
1 do.	do.	110'	
2 half	do.	55'	each
9 spans,	totalling	224'	

the smaller spans resting on trestles and masonry piers, giving a total length of 944.'

Twenty-five men were employed for three weeks on the Shahkote Pass, and from 10 to 25 men for two months on the Laram Pass. Some minor roadmaking and bridging was also carried out. On 26th June the company moved *via* the Katgola Pass to the Panjkora Valley, and was on roadwork there till 13th August when it marched back to Naoshera and entrained for Bangalore, reaching H.Q. on 5th September. The company left Bangalore again on 19th November to march to Secunderabad in relief.

The Burma company was at the commencement of the year employed on the Manipur river suspension bridge, assisted by a detachment of the 3rd company. On 15th May it moved to Mandalay, reaching that place on 25th idem. Twenty men were employed on survey work in the Southern Shan country during the working season.

Honours and Distinctions.—G.G.O. No. 397 dated Simla 16-4-1897. The Right Honourable the Governor-General in Council has much satisfaction in announcing that Her Majesty the Queen Empress of India has been graciously pleased to permit the under-mentioned Corps to bear upon their Standards, Colours, or Appointments, the words specified below in commemoration of their gallant conduct during the operations carried out for the relief of Chitral:—

"CHITRAL"—The Madras Sappers and Miners, (The Queen's Own).

Musketry.—The successes at the S.I.R.A. Meeting were:—

1895.

B.A.—Hebbal Stakes

Maharajah of Mysore's Prize, 200 yards	1st
N.C.O.s Plate, 500 and 600 yards	1st
Officers' Lloyd Lindsay	2nd
Inter-regimental revolver team	2nd
	1st

The Corps supplied the Captain (Major Wilkieson), and one of the team for the British Army versus the Volunteers.

Revolver Stakes, W. and N.C.O.s—1st and 2nd

Surprise Stakes 2nd

N.A.—Dewan's Prize 1st, 2nd, 3rd, and 4th, out of 18 teams

Moving Target Stakes 2nd

Team Attack Practice 2nd and 3rd out of 17 teams.

Pay.—Under G.G.O. 670 of 1895, the pay of all N.C.O.s and men was increased by Rs. 2 per mensem from 1st July, and half mounting allowance was granted to recruits from the date of enlistment instead of after 18 months' service.

Lines.—Towards the end of the year, sanction was received from Government for a School for the Burma company.

Mules.—The whole of the transport attached to the mobilized companies at Bangalore was employed with the Chitral Relief Force, leaving Bangalore in March, and returning in October.

Trades.—At the end of the year 125 men had not passed in any trade, but of these only 10 were over 1½ years' service, an improvement on the preceding year.

1896.

Organisation.—The 80 Driver N.C.O.s and men sanctioned in 1895 were up to strength, most of them having been transferred from the Transport Department.

Employment.—The 1st company at Head-Quarters received orders to mobilize on 11th May, and left Bangalore under Lieut. Sanders and Lieut. Chancellor on 15th to join the **Suakim Field Force**. Orders to entrain that evening were not received until after midday on the 15th, and the G.O.C. Bangalore District, "Expressed his pleasure at the smart and prompt way in which the company entrained, on extremely short notice, which reflects great credit on all concerned."

Only the equipment and pack mules (76 in all) were taken, the carts being left behind. Lieuts. H. A. Cameron and C. F. Anderson joined the company at Bombay. The company embarked on the S.S. *Goa* on 22nd, and reached Suakim on 1st June, disembarking the same day. The company was employed on the following works:—Water supply for men and horses; stabling for 480 horses; drainage of Suakim to protect it from floods; work on both permanent and floating piers, in the former retaining walls being built under water; digging out the S.S. *Vadala* which had gone aground on a coral reef, for this, excavation had to be carried out in 5' of water; besides every sort of miscellaneous job from moving a 10 ton engine to making tombstones, and roofing an arsenal storehouse. Lieut. Chancellor with one Indian officer and 41 men moved to Tokar in June, and this party was relieved by a similar one under Lieut. Cameron in August, the detachment being withdrawn at the end of October, except for 7 men who remained there until 9th November when all the Indian Troops were withdrawn from Tokar. The work at Tokar consisted of:—digging, revetting, and covering in wells; temporary stables for 50 horses; small buildings, and general repairs.

The climate of Tokar was most trying owing to the heat (119 degrees was registered in the officers' quarters), and almost continual duststorms. A detachment was employed for a short time at Fort

Teb, and a landing stage was erected at Trinkitat. One N.C.O. and 16 men were employed for a month at Erkowit, and another small detachment moved out to Teheroi on the road to Erkowit on 24th October, and after digging a well returned to Suakim on 26th. The following is an extract of an address made to the company by the C.R.E. Major S. Grant, shortly before they embarked for India:—

“It is a long time since I first heard of the many excellent qualities of the Madras Sappers from R.E. officers who served with them in Afghanistan, and in 1893 I had an opportunity at Bangalore of finding out for myself how very true their statements were. If there was one thing more than another which struck me, it was, that whether it was work or play, nothing seemed to be able to get along without the Madras Sappers having a say in the matter. And it has been exactly the same at Suakim, Trinkitat, Teb, and Tokar. From building stables, well digging, keeping up barracks ready to fall, putting on a corrugated iron roof, helping to run a telegraph office, water supply, drainage, surveying, writing, drawing, making landing stages, down to soling a pair of boots, you have been equally to the fore. I do not know what the sailing community would have done if there had been no Sappers to keel their boats for them. From the highest to the lowest, you have won golden opinions here. More than one officer has gone out of his way to tell me how well you have worked. One occasion was mentioned to me by Major Bower, of the way in which after a trying march you set about digging wells. Where all have done well it is perhaps invidious to make distinctions, but I think that all will agree with me if I say just a few words in acknowledgment of the work done at Tokar under Lieut. Chancellor, in those very trying days in June and July, and by Lieut. Cameron later on, when however the weather had improved. When the men of the Infantry were as snugly housed as the nature of the barracks would permit, you were constantly at work outside; and you shewed a cheerful spirit throughout, notwithstanding your very trying surroundings. I beg especially to thank Lieut. Sanders not only for the way in which he has run the company as such, but also for the great personal interest he has taken in every piece of work on which it has been engaged.”

The company left Suakim on 8th December, and arrived at Bangalore on 24th.

No. 2 company at the commencement of the year was on the march from Secunderabad to Bangalore, and reached the latter place on 11th January. On 9th October it started for Thayetmyo, and arriving there on 23rd, moved again on the 30th for work on the Mandalay-Kunlon railway. The Tonbo Clearing near the 18th milestone on the Maymyo road was reached on 31st December.

The 3rd company was in the Chin Hills for the first 5 months of the year; it was split up into 5 detachments, and employed on bridging, building, brickmaking, lime-burning, and road work, etc. Thayetmyo was reached on 31st of May, and on 24th October the company moved to Bangalore, reaching Head-Quarters on 6th November.

The 5th company was with the Malakand Brigade the whole year, living in E.P. tents. On 16th January there was a violent earthquake, and part of the fort wall and buildings were damaged, the fort wall was repaired, and the roofs of the buildings being supported on baulks, the walls were taken down, and rebuilt. From 13th February to the middle of June the company was on the Dargai-Chakdara road, this had to be widened from 12 feet to 24 feet and was mostly in rock; the rock-cutting ran to 50 feet in height, and the average was about 25

1896. feet; traffic was not stopped except just for the short time twice daily to fire blasts, as many as 55 charges being fired at a time. In some of the places the men had to work with ropes round their waists, tied on to trees above. Towards the middle of June the heat was very trying, the temperature in the E.P. tents rising to 115 degrees. From the middle of June to early in September, work was carried out about four miles down the road, making approaches to a tunnel, building large retaining walls, culverts, and Irish bridges. After that the road between Malakand and North Malakand was taken in hand, and various small works of every description were carried out.

The 6th company reached Secunderabad from Bangalore by route march on 3rd January. Work was continued on the lines, and mule lines and a gram boiling shed were constructed. At the H.R.A. meeting the company won the Lieut.-General's team attack practice, open to regimental teams.

The Burma company was at Mandalay at the commencement of the year; on 13th February, Lieut. Rooke with a detachment of 113 moved to Zebingyee, and constructed 12 miles of road, 8' wide, from the foot of the hills up to Wabwaye, Captain Tulloch joined this detachment on 14th March, and after the road was completed the detachment worked on the Mandalay Kunlon railway till May, when they returned to Mandalay reaching it on 13th. In Mandalay a double storied building for a company school which had been commenced the previous year was continued. On 31st October a party of 1 I.O., 1 B.N.C.O. and 52 men proceeded to Sinbyngyun, near Minhla, to dig out the R.I.M.S. *Irrawaddy* which had stranded there, and they returned to Mandalay on 26th November. On 14th December the company started for Moung Kyet about 60 miles east of Lashio, to make a road for a survey party of the Mandalay-Kunlon railway.

Musketry.—The musketry of Corps had shown a gradual but very steady improvement in the past 5 years; the percentages of marksmen and 3rd class shots being as follows:—

	Marksmen	3rd class shots
1892-93	11.14	33.15
1893-94	14.11	28.69
1894-95	17.81	16.82
1895-96	22.24	15.76
1896-97	25.00	10.00

The following were the Corps results at the 1896 S.I.R.A. Meeting.

B.A.—Hebbal Stakes	2nd
Inter-regimental revolver team	1st
N.C.O. revolver team	2nd
The Corps supplied the Captain (Lt.-Col. Wilkieson) and one member of winning team of the British Army versus the Volunteers.	
Jumping Johnny Stakes	2nd and 3rd
Zulu Stakes	2nd
Surprise Stakes	2nd
Revolver Stakes, W. and N.C.O.s	1st
Hurry Scurry	1st
I.A.—Dewan's Prize	1st, 2nd, and 3rd
Moving Target Stakes	2nd
Revolver Contest	2nd
Afghan Stakes	1st

Instruction.—Commencing with this year a portion of the Instructional Grant allotted to the Corps, was handed over to

companies on detachment, and this system has been continued each year since. A circular saw bench was purchased for use in the shops. 1896.

Lines.—Work was carried on, on the new lines at the Field Works ground; the lines at Mandalay and Secunderabad are mentioned under the work done by 6th and Burma companies above.

Equipment.—The Marshall pattern kajawah for boring and jumping bars was under trial, and leather covered tin boxes were being manufactured for trial to replace the wooden mule boxes carrying engineer equipment. Both these patterns were subsequently introduced.

Trades.—At the end of the year, 143 men had not passed in a trade, and 38 of these were over $1\frac{1}{2}$ years' service; the increase being due to the fact that two service companies were away on field service, and the consequent decrease in trades' instruction.

Officers.—Lieut.-Col. Wilkieson, and Captain T. Fraser left Bangalore on 30th September to take up the appointments of C.R.E., and Adjutant R.E. of the 2nd Division, Tirah Expeditionary Force. 1897.

Captain Evans proceeded to Calcutta on 19th August, in connection with the Field Park which he was detailed to take on the Tirah Expeditionary Force

Lieuts. Hemming and Barstow were employed on famine duty for a part of the year; the latter being in the Anantapur District from July to October.

Captain Weedon and Lieut. Hemming were attached to the Malerkotla Imperial Service Sappers for the Tirah Expedition. Lieut. Chancellor was similarly attached to the Sirmur I.S. Sappers.

Lieut. Howard was attached to the Bengal S. and M. for field service in Tirah.

Lieut. W. Robertson who was on the telegraph course at Ambala, was employed on telegraph duty with the Malakand Field Force.

Employment.—Nos. 1 and 3 companies were at H.Q. throughout the year; on 28th February, 1 Jemadar and 70 N.C.O.s and men of No. 1 company started for Mysore at a few hours notice to put out a fire that had broken out in the Maharajah's Palace; they worked almost continuously for about 3 days and nights, and the following is an extract from a letter from the Resident in Mysore to the G.O.C. Bangalore:—

“The Durbar have asked that the warmest thanks may be conveyed to the G.O.C. for his help in allowing a detachment of Sappers and Miners to be so promptly sent to Mysore on the occasion of the breaking out of the recent fire at the Palace there, as well as to the O.C. the Q. O. S. & M. for the effectual assistance rendered by the detachment. The Durbar have further remarked that the exertions of both officers and men were unremitting, and that they did their difficult work in a most satisfactory manner.”

No. 2 company commenced work on the Mandalay-Kunlon railway on 1st January, 18 miles from Mandalay, moving on 4th March to camp 1 mile further on and 500' higher, and again on 16th to Thanabya $7\frac{1}{2}$ miles farther on and 1000' higher. The work was at first mainly rockcutting, but later some station buildings, and brick and stone arches were undertaken. On 17th June, the rains having commenced, the company moved to Maymyo, returning to work on the railway on 8th December at Daboya, 10 miles from Maymyo.

No. 4 company under Captain Wright and Lieut. Traill left Bangalore on 15th August, mobilized for field service with the **Tirah Expeditionary Force**; Rawal Pindi was reached on 23rd, and on that day Lieuts. H. G. Joly de Lotbiniere and B. H. Rooke joined

1897. to complete field service strength. The company left Pindi by rail for Kushalgarh at midnight of 1st-2nd September, and whilst there, patrolled the bridge of boats day and night; the approaches to the bridge were improved, a second bridge of boats constructed, together with railway sidings, etc. Complete pack transport in lieu of draught was supplied to the company whilst at Kushalgarh. At 10-30 p.m. on 21st September, orders were received to proceed to Shinauri, and the company marched 2 hours' later, Gumbat was reached at 8 a.m. on 22nd, and after a halt of 3 hours the march was continued to Kohat which was reached at 4 a.m. on 23rd; 31 miles having been covered in 27½ hours. Shinauri was reached at 6 p.m. on 27th, and up to 17th October the company was employed on the camp defences, and the roads back from camp to Kai, and forward to the Chagru Kotal.

On 18th October the company formed part of the left column under General Kempster in the attack on the Dargai Heights, work was done on the road en route; on 19th the baggage was reduced to light scale, and on 20th the company marched with the advanced guard of the 4th Brigade. On arrival at the Chagru Kotal the road towards the Dargai Heights was improved through Mama Khan's village during the action, the company bivouacked in the village that night, and moved to Korappa next day, and blew up some towers near the latter camp. Up to the 29th work was carried on on the road back to the Chagru Kotal, and on that day the company moved with the other Sappers and Pioneers of the force in rear of the Infantry in the attack on the Sampagha Pass; the company bivouacked at Mastura, and on 30th worked on the track over the Sampagha Pass. On 31st the company moved with the advanced guard of the 3rd Brigade at the taking of the Arhanga Pass, and immediately the pass had been secured work was commenced on the road there which was very bad, bivouac in Maidan was reached late in the evening. From the 28th October to 1st November when the baggage arrived, all ranks were without kits, and on short rations. Up to 21st November, work was carried out on the road from the Arhanga Pass, on destroying towers and houses, and in strengthening piquet defences, etc. On 9th November the company formed part of General Westmacott's force in the reconnaissance of the Saran Sar. From 13th to 16th November, the company formed part of General Kempster's force in the Waran valley, and was employed on road work. On 21st November the company moved to camp Bagh, and on the 22nd formed a part of General Westmacott's force in the reconnaissance to Dwatoi, moving with the advanced guard; after bivouacking without kits for the night, the company returned to the defile next day, and camping there worked at the worst parts of the road till 24th when it returned to Bagh, working on the road en route. One Sapper was slightly wounded on 22nd. Up to 6th December, the work consisted in strengthening piquet posts, road making, destroying houses, etc., and on 7th December the company marched with the 4th Brigade towards Dwatoi, and camped on their old ground in the defile for work on the road. The company moved to Dwatoi on 8th, and was employed on that day and the 9th in work about camp, and demolition of towers. From 10th to 14th the company formed a part of the advanced guard, during the march down the Bara valley. From 15th to 31st December, the company remained in camp with the 4th Brigade at Mamani, near Barkai, working on roads, bridges, piquet posts, and camp, etc. On 16th December Lieut. A. C. Scott joined the company to replace Lieut. Joly de Lotbiniere invalided from Maidan on 6th November. On 26th December a draft of 28 N.C.O.s and Sappers joined the company. The company was on light scale, (20 lbs. kit, and no tents), from 19th October to 17th November, from 22nd to 24th

November, and again from 30th November to 19th December. The temperature at night constantly fell as low as 12 F. during the occupation of Maidan and Bagh, and the men stood the cold, exposure, and occasional spells of short rations, very well indeed. Most of those invalided were men who had contracted fever whilst at Kushalgarh in September, there was only one case of pneumonia, and one of bronchitis.

No. 5 company under Captain E. P. Johnson, with Lieuts. A. R. Winsloe, Watling, and Manley, was throughout the year at Malakand, or with the **Malakand Field Force**. During the first half of the year, the company was employed on buildings, defences, road work, and miscellaneous small works. On the night of 26th July, whilst Captain Johnson and Lieut. A. R. Winsloe were on leave, Malakand camp was attacked, and severe fighting took place, as detailed in the despatches given below. Lieut. Watling in temporary command of the company, was wounded early in the night, thus leaving Lieut. Manley in command. The casualties in the company were:—

Killed—Sergeant F. Byrne, R.E. and 2 Sappers.

Wounded—Lieut. F. W. Watling, Jemadar Chinnasami, 4 N.C.O.s, 17 Sappers, and 3 Followers.

The company followers did excellent service in supplying the Sappers with ammunition during the fighting. The force was under orders to march at 3 a.m. that night, and 25 rifles and 12,000 rounds of ammunition were loaded on mules at the time the attack took place, as they were to be removed to the Fort for safe custody, before the company marched. During the attack these mules stampeded, and the rifles and ammunition fell into the enemy's hands, but some of the rifles were subsequently recovered. Captain Johnson and Lieut. Winsloe rejoined as quickly as possible from leave. Fighting continued every night, with desultory firing by day up to 2nd August. The company were hard at work every day repairing the defences, and at night had to line the parapet wall, when one man in every three kept a look out for an hour at a time, whilst the others got what sleep they could under cover of the wall with firing going on. A heavy piece of work was the destruction without explosives of a serai, about 40 yards square with walls 15 feet high, which from its position about 100 yards in front of the abattis and walls gave cover to the enemy.

On 1st of August Lieut. Burne replaced Lieut. Watling, and Lieut. W. Robertson who was present on telegraph duty gave much useful assistance with the company.

On August 2nd, Lieut. Winsloe with Jemadar Murugesan and 50 men formed part of the column which relieved Chakdara, this detachment returned on 3rd, repairing two bridges en route, and Lieut. Winsloe was mentioned in Major-General Sir Bindon Blood's despatches on these operations; shortly after it moved to Amandara, where it was joined by Captain Johnson with the remainder of the company. On 17th August the company moved with the 1st Brigade Malakand Field Force to the Upper Swat, and was present at the action of Landakai on that day, when it was pushed forward to repair the Landakai Causeway which had been damaged and obstructed by the enemy, and covered the advance of 3 squadrons of the Guides' Cavalry, who advanced over the Causeway in pursuit. Up to 27th August, when the company returned to Lower Swat, the company was employed on the roads, in camp, foraging, and in blowing up towers, etc. Captain Johnson was mentioned in Sir Bindon Blood's despatches on these operations. The company remained at Chakdara till 30th December, when it marched on light scale of kit and without tents, with the H.L.I and a Battery to Inayat Kila. It returned to Malakand

1897. North Camp on 29th October, and on the 22nd November joined the Utman Khel column, returning again to Malakand on 5th December. On 9th December Lieuts. Burne and Manley took half the company to Chakdara.

Of the men wounded on 26th July, 1 N.O., 12 N.C.O.s and men and 2 followers were invalided, and besides these, 49 N.C.O.s and men were invalided for disease.

Captain Johnson was Field Engineer of the Malakand Brigade from January to July 1897.

Extract from letter No. 727 F dated 15-9-97 from A.G. in India to Secretary to Government of India M.D., and Despatches by Brig.-Gen. W. G. Meiklejohn, C.B., commanding Malakand Brigade (G.G.O. 1089 of 1897):—

“The C-in-C. desires to draw attention to the success with which the first sudden attack of the tribesmen was promptly met and repulsed

x x x x

Sir George White wishes to express his entire concurrence with the remarks of Brigadier-General Meiklejohn, as regards the admirable behaviour of the troops during the defence of the Malakand. For five consecutive nights, large numbers of the enemy, led on by Mullahs, and strongly imbued with a spirit of fanaticism, attacked the position with determination, during which time the troops had no rest or sleep. Each successive attack was met and repulsed with steadiness and success. x x x x x

* * * * *

In the first rush the enemy succeeded in overpowering the picket on the Graded road, and penetrated into the camp behind the enclosure in which were the camps of the Sappers and Miners, and Field Engineer Park. x x x x

The central position, viz: the enclosure in which were the S. & M. camp, the commissariat godown, and the Field Engineer Park, was occupied by No. 5 company, “Queen’s Own” Sappers & Miners, x x x there were thus in the enclosure, No. 5 company Q. O. S. & M. and two companies 24th Panjab Infantry. The enemy having overpowered the picket on the Abbott (Graded) road, got on to the high ground in rear of the position, from which they kept up a heavy fire all night, periodically charging with great determination right up to the abattis, which was lined by the Sappers and Miners. Twice they penetrated, once capturing the Quarter Guard, in which was all the ammunition of the company. It was in trying to stop this charge that Lieut. Watling, temporarily in command of the company, was wounded by a man whom he ran through with his sword. The enemy overpowered the guard and for a time held the guard room, but were eventually driven out by a party of the 24th P.I. and Sappers under Lieut. Climo. In the enclosure the fighting was very severe, for the enemy were on three sides of it, and fought with great determination, bringing a heavy cross fire on the defenders, and continually charging right up to the breast-works.

x x x x x

27th July.—At 8-30 p.m. the enemy attacked with their whole force all along the line, but were repulsed everywhere. The force was disposed as follows:—In the centre, holding the top of the Graded road and the enclosures occupied by the Sappers’ Camp, Commissariat and Field Engineers Park:—

31st Panjab Infantry.

No. 5 company Q. O. S. & M.

The Guides.

Two guns.

28th July.—During the day, desultory fire into the camp was going on. On the night of the 28th the attack was renewed with the same energy as on the two previous nights, and on all sides of the camp, the brunt of the fighting falling on the central position, and on the right flank.

29th July.—During the day the Bazaar and Serai were levelled, trees were cleared away, abattis and breastworks strengthened, and in the evening large bonfires were lighted up in front of the central position, so that the enemy advancing by the Graded road to the attack, should be obliged to cross a light. The result was that the central position did not have such a severe time of it this night. It was known that the enemy had been largely reinforced during the day, and a vigorous attack was anticipated. It commenced at 9-30 and was perhaps more vigorously and more fiercely pushed than on any previous night. It was principally delivered on the two flanks. At 2 a.m. a tremendous assault was made, and at 2-30 a.m. suddenly ceased, and the enemy withdrew having been repulsed everywhere.

30th July.—The attack was commenced again at 9-30 p.m., but there was not the same spirit in the fighting that there had been before.

31st July.—No attack; only a certain amount of sniping."

1st August.—My troops having had a quiet night, and been able to get a little rest, I decided to try and relieve Chakdara at once, taking with me the 45th Sikhs, 24th P.I., Guides Cavalry and Infantry, the squadron XI B.L., and No. 5 company Q. O. Madras Sappers and Miners.

X X X X X

No. 5 company, Queen's Own Madras Sappers and Miners.

Lieut. A. R. Winsloe R.E., commanded the company, from the 27th July to the 1st August to my entire satisfaction. His services in strengthening the defences were invaluable.

Lieut. F. W. Watling R.E., was in command of the company in the absence of Captain Johnson on the 26th, and commanded it well until he was wounded in gallantly trying to resist a charge of the enemy. After Lieut. Watling was wounded, the command for the remainder of the night of the 26th and till Lieut. Winsloe returned on the 27th devolved on Lieut. E. N. Manley R.E. He performed his duties with great credit and afterwards was of great assistance, by his zeal and exertions, to Lieut. Winsloe."

No. 6 company was at Secunderabad throughout the year; the re-building of the lines was continued.

The Burma company reached Subkyet on 25th January, and commenced the track for the survey parties of the Mandalay Kunlon railway. 45 miles of this track, which followed the Salween River at an average height of 150' above it, were completed by 24th April, and the company returned to Mandalay on the 28th May.

During the 2nd half of the year, mule lines, harness rooms, and muleteers' quarters were constructed, and the company school was completed. Two parties, each of 1 Havildar and 9 men moved out on 1st December to erect pillars for the Chinese Boundary Commission.

"A" company. One telegraph section was employed with the **Malakand Field Force**, and one Printing, and one Photo Litho section were employed with the **Tirah Expeditionary Force**.

On 17th August, orders were received to mobilize the Field Park for service with the **Tirah Expeditionary Force**. On 19th Capt. Evans and the office establishment started for Calcutta to take over the stores from Fort William; the remainder of the personnel left Bangalore on 20th for Rawal Pindi, the bulk of them having been engaged locally between the afternoon of 17th and the evening of 20th.

1897. The Field Park from Kohat and Shinauri supplied troops in the Kurram and in Maidan up to the middle of December, and then moved to Peshawar, and from there supplied the troops in the Bara Valley and the Khaibar. On the demobilization of the Tirah Expeditionary Force from 17-4-1898 the Field Park was retained with the Khaibar force. The expenditure incurred in payments and book transfers amounted to about 6 lakhs. The Field Park returned to Bangalore in June 1898. Mr. Reader worked in a manner beyond all praise, and was favourably reported on by the C.R.E. of the Line of Communications, and by Sir Power Palmer.

Honours and Distinctions.—The following were mentioned in Despatches :—

Captain E. P. Johnson	Lieut. J. R. Chancellor
Lieut. A. R. Winsloe—twice	„ F. W. Watling
„ W. Robertson	„ E. N. Manley
Captain U. W. Evans	Captain H. B. H. Wright

Lieuts. A. R. Winsloe and J. R. Chancellor were awarded the Distinguished Service Order.

Extract from G.O. Military Department, dated Fort William 14th January 1898 :—

No. 49. “The Governor-General in Council is pleased to sanction the admission to the 3rd class of the Order of Merit of the under-mentioned Native officers, N.C.O.s, and soldiers, with effect from the dates given of the respective acts of gallantry detailed :—

x x x x

Subadar Ramasami, No. 5 company “Queen’s Own” Madras Sappers and Miners, for conspicuous gallantry and coolness under fire, at Malakand on 26th July 1897, and succeeding days, controlling the fire of the company, and setting an excellent example on every occasion when the company were engaged with the enemy.

No. 1450, Naick Azhagiri, The “Queen’s Own” Madras Sappers and Miners, for conspicuous gallantry at Malakand, on the night of 26th July, when though wounded he came out of hospital to do duty, and was again severely wounded when joining his section.

Dooly-Bearer Nallatambi, The “Queen’s Own” Madras Sappers and Miners, for conspicuous gallantry at Malakand on the night of 26th July 1897, in carrying ammunition under a heavy fire from the quarter guard to the Sappers lining the abattis. He continued going backwards and forwards on this duty, until wounded by a shot in the hand.”

Dooly-Bearer Nallatambi died in March the following year from disease following the wound he received at Malakand, and the Government of India sanctioned an “Extraordinary Family Pension” for his widow, (M.D. No. 2601 F, dated 23-9-1898).

Extract from G.O. No. 288, dated Fort William 16th March 1900 :
 “The Governor-General in India has much pleasure in announcing that Her Majesty the Queen Empress of India, has been graciously pleased to permit the Corps named below to bear upon their Colours and Appointments the honorary distinctions specified opposite to each, in commemoration of their gallant conduct and distinguished services during the operations on the N.W. Frontier of India in 1897-98 :—

The “Queen’s Own” Madras Sappers and Miners—

“PUNJAB FRONTIER”—“MALAKAND”—“TIRAH”.

Precedence.—G.G.O. 605, dated Simla, 4th June 1897 :—The Governor-General in Council is pleased to notify, that the several

regiments, battalions, and batteries of the Native Indian Army, shall in future, when acting together, take precedence among themselves in the following order:—

CAVALRY.

ARTILLERY.

SAPPERS AND MINERS.

The "Queen's Own" Madras Sappers and Miners.

The Corps of Bengal Sappers and Miners.

The Corps of Bombay Sappers and Miners.

INFANTRY.

Organisation.—An additional sweeper per service company detailed for the Field army, was sanctioned as part of the peace establishment, from 1-4-1897 (G. of I. M.D. No. 383 C. dated 16-2-1897).

R.E. W. and N.C.O.s—Under I.A.C. 202 of 1897, R.E. W. and N.C.O.s were made eligible for 12 months' furlough, with a free passage, provided they had re-engaged and completed 7 years' service in India; this rule also applying to those serving beyond 21 years. A free passage was also sanctioned for their families, if specially permitted to accompany them.

Designation of Companies.—From 11-1-1897 the service companies were called No. 1, No. 2, etc., and not 1st, 2nd, company. (C.O. 13 of 1897).

Musketry.—Native officers were allowed to draw 60 rounds of revolver ammunition in lieu of rifle ammunition if preferred. (M.C.O. 315 of 1897).

Revised musketry regulations were introduced from 1-4-1897, the alterations from the 1892 regulations being that the 5 Rapid Volleys at 400 yards were replaced by 5 rounds fired Individually by word of command at 500 yards—only 5 volleys were fired at 600 yards, and 5 rounds were to be fired at a range between 100 and 200 yards at a moving target not exceeding 2' square—3rd class shots to repeat all Individual Practices.

The allowance of ammunition was:—

Individual	...	...	...	21
Sectional	...	...	...	20
Moving	...	...	...	5
Commandant's allowance	...	...	...	50
Regtl. or Brigade Field Firing	...	...	...	10
Match shooting	...	...	...	10
Practice of bad shots	...	...	...	4
Total	...	...	...	120

The Commandant's allowance of 50 rounds was to be expended, 5 rounds at a vanishing target.

10 " in an Attack Practice

10 " in Company Field Firing

25 " in the further instruction of bad shots, etc.

The improvement over the shooting in 1895-96 was—

Individual	2 %
Volleys	7 %
Field Practices	1 %

The Corps results at the 1897 S.I.R.A. Meeting, were:—

B.A.—Hurry Scurry	1st and 2nd
Hebbal Stakes	2nd
Inter-regimental Revolver Team	1st
Sportsman's Contest	1st

1897.	Jumping Johnny Stakes	2nd
	Zulu Stakes	2nd
	Duty Officers' Prize	1st
	Surprise Stakes	1st and 2nd
	I.A.—Nursery Stakes, 200 yards	1st
	Dewan's Prize	1st and 2nd

Equipment and Trades.—Signalling equipment was abolished for Sappers and Miners, (I.A.C. 3 of 1897), and Visual Signalling therefore ceased to be a Sapper Trade.

Instructional Workshops.—New forges were added, and a new sawpit commenced. The timber shed was being closed in.

Trades.—At the end of 1897, 146 men had not passed in any trade, but of these 51 only were over 1½ years' service.

Mules.—All transport mules in charge of the Corps at Bangalore were withdrawn for service in Tirah, etc., and these were never replaced; companies thereafter only having 1st line mules in peace time.

1898. **Officers.**—Lieut. Col. S. Grant arrived on 8th May 1898, and assumed command of the Corps on the following day.

Captain C. Roe was placed on plague duty in Bangalore, under the orders of the Resident in Mysore, from 15-10-1898.

Lieut. Howard continued to be attached to the No. 1 company of Bengal S. & M. for the whole year, first on the Tirah Expeditionary force, and afterwards with the Khaibar Brigade.

Lieut. S. G. Loch joined the telegraph course on the 10th April.

Employment.—Nos. 1 and 3 companies were at H.Q. throughout the year.

No. 2 company was at work on the Mandalay-Kunlon railway up to 10th June, when it left Camp Waboye for Thayetmyo, arriving there on 17th June. Whilst employed on the railway the work was mostly rock cutting, and masonry bridges and culverts. During the time the company was on railway work, the men earned double the Government rates of working pay, and Rs. 4000 was put into the company fund.

Up to 5th April No. 4 company was camped at Mamani in the Bara valley, and was employed mainly on bridging up to the 17th March, and thereafter on road work. The company left Mamani on 5th April for Peshawar, and arrived there on 9th having halted 4 days en route at camp Ilam Gudr. Lieuts. Rooke and Scott left the company on 10th April, and on the 12th the company left Peshawar by route march for Malakand, arriving there on 18th. Lieut. Sandys joined the company on 18th, and 2nd-Lieut. Mathews joined it on 21st.

From 18th April to 5th July the company was employed in completing some defensible barracks, and the Main Guard house in the Kotal enclosure. On 5th June 2nd-Lieut. Pollard Lowsley joined the company *vice* 2nd-Lieut. Mathews transferred to plague duty. On 5th July the company, less No. 1 section, moved to Khar and camped there with the Swat moveable column. No. 1 section rejoined on 21st November, and on the 29th the company proceeded with the Swat Moveable Column to Chakdara, where they remained till 7th December, moving on that date with the Column to Camp Haibatgram. From 8th to 18th December the company was working at an 8' road round the Landakai spur, this road was 1½ miles long, and most of the cutting was in rock. On 20th December the company returned with the Moveable Column to Khar.

On 5th January No. 5 company marched from Dargai to Kasimeh, and on the 6th reached Sanghao and joined the **Buner Field**

Force; on 8th the company was present at the attack of the Tanga Pass, working on the path behind the R.W. Kent Regiment, the work was continued till dark by which time most of the 1st Brigade, and a little baggage had passed. The company bivouacked on the work and continued at it for the next two days, except for one section which proceeded under Lieut. Manley to Katlang, to improve the road from there towards Rustam; the company moved to Rustam on 11th and joined the 2nd Brigade, working from the 13th to 17th on the Ambeyla Pass road, about six miles up, and two miles down on the farther side; this entailed a long march each day to work, and on 16th the company bivouacked on the top of the pass with the Guides' Infantry. On the 18th the company worked on the Buner Pass to enable the baggage of the 1st Brigade to pass, and on the 19th left for North Malakand, which was reached on 27th. The company remained in North Malakand till 10th February and then moved to Malakand. From 10th February till 18th April the company worked on the defences of Malakand, and leaving there on the latter date they reached Bangalore on 2nd May.

From 1st March to 15th April, Captain Johnson was Field Engineer Malakand, and in charge of the new defence works, as well as all existing defences, buildings, water supply, roads, etc.

No. 6 company was at Secunderabad throughout the year; the rebuilding of the lines was continued, and a system of drainage in the lines completed.

At the commencement of the year 20 men of the Burma company were with the Burma-China Boundary Commission, the remainder of the company being at Mandalay. Lieut. Loch with a detachment of 93 of all ranks moved to Myingyam to dismantle wooden barracks etc., which were to be re-erected at Mandalay and Maymyo. The N.I. Hospital and followers' quarters were stored in Mandalay to be erected later as a Sapper Hospital; the other buildings were carted up to Maymyo, and on 6th April, Captain Heycock with 130 of all ranks commenced the re-erection at Maymyo, the company returning to Mandalay on 26th June on completion of the work. The parties with the Burma-China Boundary Commission rejoined in April and May. Work on the Sapper Hospital and Lines was carried on after the return of the company to Mandalay. One N.C.O. and 25 men left on 19th November to join the southern party of the Burma-China Boundary Commission, and a similar party left on the 21st November to join the northern part of the commission.

"A" company had a telegraph section under Lieut. Robertson employed on the **Buner Field Force**, and with the Malakand Brigade.

Captain Johnson and Lieut. Robertson were mentioned in despatches in connection with the Buner Field Force.

Organisation.—Under I.A.C 151 of 1898, the following changes were introduced:—A company commander to be either a Major, Captain, or a Subaltern; the two Pontoon Sections in "A" company were abolished, reducing the strength of the company by 2 Indian officers, 2 B.N.C.O.s, and 72 N.C.O.s and men. This left the company:—

	4 Telegraph Sections.	2 Field Printing Sections.	2 Field Litho Sections.	Total.
Br. Officers	...	...	...	2
B.N.C.O.s	4	4	4	12
Havildars	4	...	...	4
Naicks	4	...	...	4
Sappers	24	6 (*)	8	38 (+)

(*) Increased to 8 by I.A.C. 32 of 1901. (+) Increased to 40 by I.A.C. 32 of 1901.

1898. and made the full strength of the Corps:—

British Officers	22	
R.E. W. and N.C.O. Staff	3	} 32
R.E. N.C.O.s, 6 Service and "B" coys.	14	
" Burma company	3	
" "A" company	12	
Indian Officers	24	
Havildars	52	
Naicks	84	
Sappers	1238	(1240 in 1901)
Buglers	16	
Driver Havildars	4	
" Naicks	4	
Sapper Drivers	72	
Total Combatants	1548	(1550 in 1901)
Recruit and Pension Boys	42	
1st Line Equipment mules	72	

Under A.G. in India No. 1689 R.E., dated 10-8-1898, this reduction was to be effected as soon as possible, by transfers to other companies and by reducing recruiting, until the absorption was completed.

Under S.G.O. No. 7 of 1-1-1898, two Ward Orderlies were to be enlisted, or transferred from Sappers, to form part of the fixed establishment of the Corps. This number was increased to four by M.C.O. No. 132 of 3-8-1899, and subsequently to seven under M.C.O. 401 of 3-7-1900, the number of Sappers being proportionately reduced.

On 1-6-1898 Jemadar Munisami the last of the Madras I.O.s and N.C.O.s with the Burma company, took his pension, and the company was then entirely composed of Burmans, Karens, etc., as far as the Native ranks went.

Musketry.—The improvement over the shooting in 1896-97 was:—

Individual 2%

Collective, and Figure of Merit 6%

but the percentage of the Field Practices was 1% lower.

The following were the Corps successes in the 1898 S.I.R.A. Meeting:—

B.A.—Spencer Prize	1st
N.C.O. Revolver Team	2nd
Jumping Johnny	1st
Revolver Stakes	1st
Zulu Stakes	1st and 2nd
Surprise Stakes	1st, 2nd and 3rd
N.C.O.s Revolver	2nd

I.A.—Bugle Stakes	2nd
Duty Officers' Prize	1st
Championship, 500 yards	2nd
do. 600 yards	2nd
Afghan Stakes	1st
Nursery Stakes, 200 yards	1st
Maharajah's Prize	2nd
Dewan's Prize	1st and 2nd

Assault-at-Arms.—In the District Assault at Arms, held from 23rd to 25th March 1898, the Corps results were—

Tug of War	1st
Gymnastics, Non-Instructors	3rd
Escalading	1st
Lance v. Bayonet	3rd
Sword v. Bayonet	3rd
Bayonet v. Bayonet	1st and 3rd
Tent Pitching and Loading	2nd
Tent Pegging, Class II.	1st
Single-Stick for I. Officers	1st

Detachment for Nigeria.—In letter No. 946 B, dated 14-3-1898, the Government of India called for 20 volunteers from the Sappers and Miners for employment with the Engineer company to be attached to the force to serve under the command of Major Lugard in the Niger Territories, to serve for three years from date of departure from India.

The conditions offered were:—

Pay—Havildar, at £3 per mensem.

Naick „ £2/5/0 „ „

Sapper „ £1/15/0 „ „

Wound and family pensions to be granted under Indian Regulations.

Free rations from the date of leaving India till date of return.

Free issue of kit—3 khaki suits.

2 pairs boots.

2 puggris.

1 blue jersey.

2 pairs socks.

One Naick and four Sappers left for England *via* Tuticorin on 3-5-1898, and one Havildar, one Naick, and 13 Sappers left for England *via* Bombay on 22-5-1898.

Two N.C.O.s and 15 Sappers returned in December, 1900; one N.C.O. and two Sappers having died in Nigeria.

Extract from letter No. 65, dated Jebba, 14th May, 1900, from Brigadier-General Lugard to the Secretary of State for the Colonies:—

“I forward herewith a letter addressed to me by Colonel Willcocks, C.M.G., D.S.O., Commandant, West African Frontier Force, relative to the services of the Madrassis who are now returning to India, and recommending seven of them to the special notice of the Lieutenant-General Commanding in Madras.

I have the honour to endorse the remarks by Colonel Willcocks, and I trust the men may receive the promotion for which he recommends them. The Q.O. Madras Sappers and Miners have been most useful here, and have had to put up with very considerable hardships and the absence of many things which are most essential to them. Their conduct has been good, and their work has been highly spoken of by the officer commanding the Sapper Corps.”

Extract from letter No. 34, dated Jebba, 30-4-1900, from Colonel J. Willcocks, C.M.G., D.S.O., Commandant, West African Frontier Force, to H.E. The High Commissioner, Northern Nigeria:—

“I bring to your notice the following N.C.O.s and men of the Q.O. Sappers and Miners attached to this force, and who are now about to return to India. I shall be glad if your Excellency will forward this letter on to the Right Honourable the Secretary of State for the Colonies, with any remarks you may wish to make, as I am strongly of opinion that the services of these men who have been serving so far from their homes, and who are the first natives of India who have ever reached the Niger, should be brought to the favourable consideration of the Government of India. Three of the 20 who came out originally have died, but this does not compare unfavourably with the Europeans, and

1898. as these Sappers have had no means of getting a change of climate by invaliding or otherwise, I think your Excellency was fully justified in believing that they would stand the climate fairly well.

Havildar Munisami—A N.C.O. of excellent character, very hard-working, intelligent, and well able to command his men. I sincerely trust the authorities in Madras will see their way to promoting him to Havildar-Major for which I beg most strongly to recommend him.

Lance-Havildar Munisami—Character very good, hard working and has been most useful. I recommend him for promotion to Havildar.

Lance-Naick Rajendram—Character very good, work most satisfactory, served in the expedition to the Upper Kaduna Country. Recommended for Naick.

Lance-Naick Pazhaniandi—Character very good; work always well done.

Sapper Subbarayan—A plucky fellow, who though old, stuck to his duties throughout.

Sapper Kuppiah—Has been most useful to the force, and worked very hard.

Sapper Ponnen—Exemplary character, good workman, and very hard working.

The above seven men are specially selected for mention, but I would add that nearly all have worked well under very difficult conditions, and fully maintained the credit of the Corps to which they belong."

Extract from letter No. 1732 R.E. dated 6-9-1900 from A.G. in India to the L.G.C. Madras.

"H.E. the C-in-C. considers the report very creditable to the Q. O. Sappers and Miners."

Havildar Munisami and Naick Rajendram earned the West African medal; and the 3 Sappers who were specially recommended, were allowed to reckon 2 years as qualifying service for pension for every year spent in West Africa.

Havildar 1133 Munisami was appointed Colour Havildar, and Sappers 1991 Rajendram and 1516 Pazhaniyandi were appointed Lance-Naicks, from 23-12-1900 in recognition of their services with the West African Frontier Force in Nigeria, (C.O. 38 of 1901, and 12 of 1902).

Whilst in England on the return journey to India, the detachment was taken up to Balmoral to see Her Majesty the Queen Empress, who said—"I am very pleased to see you here, I am very fond of my Indian Army, and have watched with the greatest interest the excellent work they have been doing not only in Africa, but also in China."

Instruction and Workshops.—From 6th September the O.C. "A" company took over complete charge of the Printing, Photo, Litho, Survey, and Telegraph Schools from the S. of I.

The S. of I. took over the bulk of the Instructional work in trades, which had hitherto been carried out by the S. of P.

A long open shed was walled in, giving 3782 square feet of storage for stores in charge of the S. of P.

The portable engine in use in the workshops was condemned as unsafe by the Government Inspector.

R.E. W. and N.C.O.s.—Under I.A.C. 12 of 1898 the following ruling was sanctioned:—

When a medical board recommends that an R.E. W. or N.C.O. should accompany his invalid wife to England, he may :— 1898.

- (1) Take furlough or special leave up to 1 year, if the invaliding is temporary.
- (2) Take furlough or leave, or revert to the Home Establishment in his R.E. rank, if the invaliding is permanent.

Trades.—At the end of 1898 there were 27 men of over $1\frac{1}{2}$ years' service who had not passed in any trade.

Plague.—On 12th October on a Corps parade, the men were strongly advised to be inoculated, and commencing on that day, nearly the whole of the Corps at Head-Quarters was done. The first case of plague in the lines occurred on the 24th-25th of that month and on 15th November, it was decided to evacuate the lines; all tents were used, 500 gypsy shelters were put up, and huts were constructed of any material available in the Park, so that by the end of the month there was sufficient accommodation on the parade ground for all the men and families at Head-Quarters, and the lines were practically deserted. The lines were thoroughly disinfected, and were reoccupied early in 1899. The actual number of deaths from plague in 1898 was Sappers 6, Followers 2, Families 6.

In the latter half of November every available man at Head-Quarters was employed in erecting buildings in the two plague hospitals that were formed under the orders of the Resident in Mysore.

Officers.—Capt. Roe returned from plague duty under the Resident in Mysore on 17th August 1899; the following is an extract from the Report on the Outbreak of Plague in the C. and M. Station, Bangalore, 1898-99 :— 1899.

"It was found necessary on the 11th November 1898 to appoint Captain Roe R.E., who had been previously employed on disinfection work, as Chief Plague Officer, working directly under the Resident. The entire duty of providing men for the whole of the plague work in the Station, of procuring disinfectants and material, of organising a proper staff for keeping registration and watch at the graveyards, of supervising the work of the Military officers employed on disinfection work, and of the Superintendents and Supervisors, and of supplying the numberless details, wants, and precautions of plague organisation, fell on Captain Roe, and it was altogether due to his powers of administration, and to his tact and untiring energy, that the plague organisation evolved so quickly from a condition of confusion, to one of high efficiency. The Resident is under a deep debt of gratitude to Captain Roe for services so successfully rendered at a very critical period."

Captain Roe subsequently received the Kaisar-i-Hind medal, for his services on plague duty.

Employment.—Nos. 3 and 5 companies were at Head-Quarters throughout the year, and No. 1 company until 9th December, when it moved to Secunderabad, reaching that place on 12th idem.

No. 2 company was at Thayetmyo throughout the year with the exception of 2 months in camp, it was employed mainly on private work, and on the upkeep of equipment.

Half of No. 4 company moved on 1st February from Khar to Malakand, returning on 24th March, and the following day the company marched for Naoshera, whence it railed to Secunderabad, arriving there on 11th April, and on 13th December it railed to Bangalore. Up to the end of March the company was continuously employed on road work. At Secunderabad, a party successfully salvaged a yacht that had sunk in the Husain Sagar Tank, and afterwards repaired the hull.

1899.

No. 6 company left Secunderabad on 9th March by rail for Nao-shera, and marched from there to Khar; the right half company moved to Malakand on 29th March, and was joined by the rest of the company on 15th May. From 1st to 24th October the company formed part of the Supporting Column for the Chitral Reliefs. On 25th October the company, less two sections which went to North Malakand, moved to Malakand, and the two sections rejoined at Malakand after repairing the range, etc., for the R.A. practice camp. The company moved to Chakdara on 29th November, and remained there the rest of the year. At Malakand, Khar, and Chakdara, the following works were carried out: road work, blasting and levelling to form a glacis, a bathing tank, building, brickmaking, etc.

Early in the year the Burma company completed the Sapper Hospital at Mandalay, and on 14th April marched to Maymyo for road work, returning to Mandalay on 1st June. The two detachments with the Burma China Boundary Commission rejoined at Mandalay, on 29th May, and 30th June. On 1st September half the company proceeded to Myingyan to dismantle wooden barracks that were required at Mandalay, and they returned to Mandalay on 4th November. A mortuary and a bachelors' mess were in course of construction in the lines of the company. During the heavy floods in November when the moat was breached, the company was employed in repairing breaches, and bridging gaps, etc. On 16th November, 25 men under a Havildar proceeded to join the Burma China Boundary Commission.

Lieut. Loch was on telegraph duty throughout the year with the section of "A" company in the Panjab.

Musketry.—The course fired in 1898-99 shewed the following improvement over the previous year:—

Individual 2 per cent.		Field Practices 1 per cent.
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The percentage of collective practices, and the Figure of Merit was unaltered.

The percentage of marksmen increased from 31 to 35, and that of 3rd class shots decreased from 8 to 5.

The Corps successes in the 1899 S.I.R.A. Meeting were:—

B.A.—Hurry Scurry	2nd
C.-in-C.s Prize	2nd
I.A.—Unlimited Entry, 500 yards	2nd
do. 700 "	1st
Aggregate Prize	1st and B.R.A. Medal
Championship	3rd
Nursery Stakes, 200 "	1st
Odewala Stakes	2nd
Dewan's Prize	1st
Revolver	2nd

Organisation.—Under G. of I. letter No. 3307 G.B. dated 20-3-1899, to the A.G. in India, a Q.M.S. Instructor in Trades, and a Q.M.S. Instructor in Field Works were added to the Corps, appointments that have proved very valuable in the instruction of the Corps.

Under M.C.O. 685 of 17-11-1899 the establishment of Recruit and Pension Boys was reduced as follows:—

Recruit Boys from 24 to 12		Pension Boys from 18 to 9.
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Lines.—The new lines on the Field Works ground progressed favourably during the year. The occupants of the old Pensioners' Lines were bought out, and these lines pulled down, thereby giving more open space at the south end of the lines. A brick wall was built to cut off the lines from the strip of bazaar lying between the lines and Cavalry Road.

Equipment.—All service companies had been provided by the end of 1899 with the Marshall pattern kajawah for bars, and all new boxes mule that were manufactured were of the leather-covered tin pattern. The Saddle M.B. modified was authorised for all equipment saddles. 1899.

Instruction, Workshops, and Trades.—Under I.A.C. 72 of 1899, the course of telegraph instruction for British officers was increased from 18 months to 2 years.

The work in the carpenters' shop was much hampered by the want of an engine to replace the old one that had been condemned the previous year.

Commencing with 1899, all men who were unable to qualify as tradesmen after three years' instruction were permanently classed as labourers. At the end of the year there were 13 trained soldiers who had not qualified in a trade.

On 1st May 1899, the following was laid down as the normal proportion of tradesmen in each service company:—(C.O. 175 of 1899).

Basketmakers	6	Farriers and Armourers	3
Bricklayers	36	Painters	3
Brickmakers	12	Sawyers	12
Carpenters	36	Smiths	12
Chucklers	3	Stonecutters	12
Clerks	3	Surveyors	6
Coopers	3	Tinsmiths	3

Dress.—From September 1899, a khaki great coat was introduced to supersede the old pattern of blue one. (G.O.C.C. 337 of 1899).

A forage cap was introduced for the Burma company, to supersede the Goungboun in full dress.

Pay and Allowances.—Under I.A.C. 151 of 1899, British officers and N.C.O.s serving with the Burma company were allowed Rs. 50 and Rs. 20 per mensem, extra allowance on passing the L.S. Burmese, in lieu of the usual reward for passing such examination, if preferred.

Reserve.—Under I.A.C. 117 and 118 of 15-8-1899, a Reserve of 60 was to be formed.

Examinations.—All officers on the permanent establishment of a Corps of Sappers and Miners, will, in future, be required to pass the lower standard in Urdu, or other language of the district in which they are serving, within 12 months of appointment, after which period they will receive no staff pay until qualified as above, unless specially exempted by the G. of I. Officers now serving who have passed the existing tests, will be regarded as duly qualified so long as they remain in their present appointments. (G.O.C.C. 496 of 1899).

Officers.—Lieut. F. G. Howard was employed as Embarking Officer at Madras from 15th August till 13th September 1900. 1900.

2nd-Lieut. F. H. Bushell joined the telegraph course at Ambala on 27th October 1900.

Employment.—Nos. 2, 4, and 5 companies were at Headquarters throughout the year.

No. 1 company was at Secunderabad throughout the year; the re-building of the lines was continued, and a tile shed and hay shed were commenced, a number of trees were planted in the lines, and new mule lines were made.

No. 3 company received orders for **Field Service in China** on 20th June, and left Bangalore on 6th July under Captain Tulloch with Lieut. E. G. Henderson and 2nd-Lieut. J. A. Garstin. Lieut. R. E. D. Goldingham joined in Calcutta on 13th July. The company embarked on the *Sirsa* on 13th July, and sailed the same afternoon, Taku was reached on 6th August, and there the company transhipped

1900. and went up the river to Sinko on the 7th, and entraining there early on the 8th reached Tientsin that day. Whilst at Tientsin, half the company under Lieut. Henderson moved to Hsi-ku and put the post in a state of defence; Lieut. Goldingham and 21 N.C.O.s and men were employed in repairing the gates of a lock, and the remainder of the company were employed on defensive works at Tientsin. At 3 a.m. on 16th August the company left Tientsin for Peitsang, taking 30 days' rations and 150 rounds per man, with orders to place all British posts on the Line of Communications in a state of defence, halting, if necessary, to do so.

The posts at Peitsang, and Hosiwu were placed in a state of defence, and the left half company reached Pekin on 27th August, the right half company remaining at Tungchou to repair the road. On 30th August the left half company moved with a small force to seize the railway junction at Fengtai, and remained there till 7th September, putting the post in a state of defence, and building two small redoubts at the railway station and an observatory 55' high for signalling communication with Pekin. On return to Pekin the company commenced preparing quarters for the troops who were to winter in Pekin, and Captain Tulloch was appointed G.E. Tartar City; on 17th September the right half company arrived at Pekin, and Lieut. Henderson was appointed G.E. Temple of Heaven, and two sections of the company were quartered there, two sections were also sent to Tartar City West under Lieut. Goldingham.

Chinese workmen were employed under the supervision of the company, and at one time as many as 1200 of these were employed. The work consisted of:—Cleaning up houses, and general repairs, making fireplaces, building a shed 150' by 24' with 14 K.P. trusses, building a bakery, stables for between 1000 and 2000 mules, hospitals, etc. On 12th October Captain Tulloch and 2nd-Lieut. Garstin with half the company went with a Moveable Column to Paoting-fu, returning to Pekin on the 6th November; on the outward march there was little work for the company beyond making ramps at the camping grounds; at Paoting-fu two temples were blown up with gun cotton and powder, and on the return march two more temples and the gate of a town were blown down and three villages destroyed by the company; the return march was by a different route, and two rivers had to be crossed, the first about 50 yards broad was bridged with junks, and took the whole force with guns and A.T. Carts; the second was 150 yards wide but fordable, the deepest part being 3' deep, the guns, Cavalry and all animals forded the river, the other troops, baggage, and A.T. Carts were ferried over, taking about six hours. On 8th November, the company left Pekin, and reaching Tientsin on 14th, entrained next day for Sinho. On 16th they embarked on a river steamer, and transhipping to the *Urlama* reached Shanghai on 23rd. The company disembarked on 24th, and marched to camp at Jessfield.

Captain Tulloch handed over the company to Lieut. Goldingham on 26th November, and embarked for England to join the Staff College. The company was employed thereafter in hutting themselves.

In January 1900 No. 6 company was employed in draining and levelling some government ground near Chakdara Fort, and lost one man shot whilst on duty on night of 30-1-1900; at the commencement of February the company moved into Khar Camp, where there was little special work; on 12th May they moved up to Malakand, and remained there till 8th October, carrying out the following works:—

Construction of a bathing tank; remaking the road to the Gibraltar piquets, about half the road was realigned and the remainder regraded and widened to 8'; a site was prepared and enclosed with a

stone wall for the Head-Quarter camp; the Buddhist road was repaired from the Malakand to its junction with the Graded Road towards Khar, and the glacis round the north wall of the Malakand Defences was cleared, and all dead ground filled up. On 8th October the company moved to Chakdara as a part of the Supporting Column for the Chitral Reliefs, and remained at Chakdara till the 29th, when it returned to Khar in advance of the Moveable Column, and laid out a camp on a fresh site; for the remainder of the year the company was employed on roadwork and defences.

The detachment of 26 N.C.O.s and men of the Burma company returned from work with the Burma China Boundary Commission on 28th May, and their work and discipline were very favourably reported on by Major Saunders D.L.I. who was in charge of the escort. On 1st March, owing to the threatening appearance of the Kachins, the garrison of Myitkina was considerably increased, and Lieut. Hodgson proceeded there with 50 men; on arrival there two parties of 12 men each were sent out with two small columns to the hills to the east, the remainder put Myitkina in a state of defence, and erected a stockade at the signalling station of Pongatong. The detachment returned to Mandalay on 9th May. On 1st July work was commenced on the District Staff Office which was made from an old company barrack that had been dismantled at Myingyan the preceding September, and this work was completed by the beginning of December. Other works completed in Mandalay during the year were:—a mortuary, a hospital bath room, a bachelors' mess, and a semi-permanent bridge over the moat at the rifle ranges, 230' long.

"A" company provided a Printing Section and a Photo-Litho Section for **Field Service in China**; these sections proceeded with No. 3 company to Pekin, and remained there when the company left for Shanghai. Lieut. S. G. Loch, with 1 B.N.C.O. and 16 N.C.O.s and men started in June for telegraph work with the Field Force in China; Lieut. S. G. Loch was appointed Assistant Field Engineer for Telegraphs on the Staff of the Field Force, and was placed in command of the Q. O. S. & M. Telegraph Section from the 27-11-1900 in addition to his other duties. This telegraph section, with the exception of the B.N.C.O., was seconded from the Corps whilst employed in China. One B.N.C.O. proceeded in June with the C.R.E.s office for Field Service in China. Two N.C.O.s proceeded in June to join the Engineer Field Park on Field Service in China, and were seconded whilst so employed. Two Sappers also started in June for employment as ward orderlies in the Native General Field Hospital in China, and were seconded.

Honours and Distinctions.—The following were mentioned in despatches for service in China:—

Captain J. A. S. Tulloch.

Lieut. S. G. Loch.

and Lieut. S. G. Loch received the Distinguished Service Order.

Subadar Devasahayam received the 2nd class of the Order of British India as supernumerary to the establishment of the Order, for his good services in China.

G.G.O. 276, dated 3-4-1903. The Governor-General in Council has much pleasure in announcing that His Majesty the King, Emperor of India, has been graciously pleased to permit the following Corps to bear upon their Colours and Appointments, the honorary distinctions specified below, in commemoration of their gallant conduct and distinguished services during the operations in China in 1900.

"CHINA," 1900.—"Queen's Own" Madras Sappers and Miners.

Organisation.—The appointment of two Lance-Havildars per company was sanctioned in April 1900.

1900. **Arms.**—The Corps was rearmed with Lee Metford Mark I* rifles during the year.

Musketry.—Under G.O.C.C. 320, dated 19-5-1900, the musketry course laid down in 1897 was altered as follows:—

The 3rd distance in the Individual practice was altered from 600 yards to 700 yards.

The 2nd period to consist of:—

5 rounds, volleys,	at 700 yards,	lying
5 „ independent,	„ 500 yards,	kneeling or sitting
5 „ „ „	„ „	any military position,
		moving target.
5 „ mag. „	„ 200 yards,	kneeling or sitting, 50
		seconds allowed.

No. 6 company, being at Malakand, was allowed to carry out a special course.

The results for the year 1899-00 were not quite so good as in the previous year, the deterioration being:—

Individual, 1%. Sectional, 1%. Field Practices, 4%.

The percentage of marksmen had risen from 35 to 36, but that of 3rd class shots had also risen from 5 to 8.

The Corps successes at the S.I.R.A. Meeting were:—

B.A.—Duty Officers' Prize	...	...	1st
I.A.—Dewan's Prize	...	...	1st and 3rd
„ Revolver Prize	...	...	2nd
„ Afghan Stakes	...	...	2nd
„ Championship, 800 yards	...	...	1st

Assault-at-Arms.—In this the Corps came out considerably better than in the shooting line, winning as follows:—

Tug of War...	...	...	1st and 2nd
Escalading...	...	...	1st
Bayonet Tournament	...	...	1st and 2nd
Tent Pitching	...	...	1st
Singlestick, British Officers	...	...	1st
Singlestick, Indian Officers	...	...	1st
Tent Pegging, Class II	...	...	1st
Bayonet v. Lance	...	...	2nd and 3rd
Bayonet v. Sword (mounted)...	...	...	2nd and 3rd
Bayonet v. Bayonet	...	...	3rd

Equipment.—During 1900 the issue of clasp knives from the arsenal to all men, as equipment, was sanctioned, the men receiving compensation for the knives already in their possession, which they had previously had to purchase as "Clothing".

A special grant was allotted to equip each service company with two sets electrical firing apparatus.

Under I.A.C. 139 of 1900 an extra tent was allowed for each Photo Litho section, so that the sub-sections could work separately on service if required.

Mules.—No. 5 company received its 1st line equipment mules in August 1900.

Workshops, Instruction, and Trades.—A 6 (nominal) 12 (brake) H.P. vertical single action stationary engine, with cross tube B.B. boiler was purchased at a cost of £180, and was fitted up in March 1900; it was in use for the remainder of the year with lathes and band and circular saws.

200 running feet of the roof of the store shed was re-roofed, and the materials for the re-roofing of the remainder prepared.

A portion of the Ulsur Rock was taken over from the M.W.S. for bridging, pontooning, etc.

At the end of 1900 there were 19 trained soldiers who had not qualified in any trade. 1900.

Lines.—Work was continued on the new lines on the Field Works ground; and in the old lines at H.Q. 10,400 square feet were re-roofed with Mangalore tiles, replacing the old country tiles.

At Mandalay the P.W.D. enlarged the arm-rack, and built two gun-cotton magazines, besides constructing a mule watering trough with a piped supply from the moat.

Sanction was accorded to the provision of a 2nd British officer's quarter for the Burma company, and a scheme was drawn up for constructing new lines for the company; the old lines built in 1888 were not of a very permanent description to start with, and had become very dilapidated. The estimated cost of the new lines was a little under Rs. 30,000.

Clothing.—Putties were introduced as an article of kit for the men in July 1900. (C.O. 241 of 1900).

Inspection and Control of Detached Companies and Sections.—In letter No. 1387 R.E. of 16-7-1900 from the A.G. in India, to the Secretary to the Government of India, M.D., proposals were submitted for alterations in the rules under which detached companies and sections were inspected and employed. It was pointed out that M.D. letter No. 132 C. of 15-1-1894 had negatived the proposal that detached companies should be inspected by Commandants of Corps, because the periodical inspection of the D.G. of M.W. should embrace detached companies, but that this had not been found to work well in practice, and it was proposed in future to delegate this duty to Chief Engineers of Commands.

The proposals sent in were:—

(1). The Chief Engineer of the Command will make an annual inspection in technical matters of each detached company of Sappers and Miners, and Submarine Mining Section within the command.

(2). The C.R.E. is charged with the general control of the R.E., Sappers and Miners*, and Submarine Mining Sections in his district. It is his duty to see that the several units and members of the Engineer Staff are employed to the best advantage, and that the artificers of Sapper and Miner companies are given every facility for practising their trades.

He will accompany the Chief Engineer of the Command during his inspection of Sapper and Miner Companies, and Submarine Mining Sections.

And with these proposals the subjoined explanatory memo was submitted.

SAPPER AND MINER COMPANIES.

1. **DISCIPLINE.**—The O.C. the company will remain responsible for the discipline and training of his company as heretofore, and he will continue to exercise the powers of a C.O.

2. **EMPLOYMENT ON WORKS.**—It will be the duty of the C.R.E. to afford every facility to the junior officers for learning ordinary M.W. duties, designing, and estimating, etc., whenever they can be spared from their duties with the Sappers and Miners, the object in view being to employ them more fully than has been the case hitherto, and to produce good all round men. Under A.R.I. Part 1 Vol. 1 para. 501 an allowance of Rs. 2 a day may in certain circumstances be given to officers so employed; when passed, it is chargeable to works.

* Except at Rurki, Bangalore, and Kirkee, where this is otherwise provided for.

1900.

3. **THE C.R.E.**—will also under the orders of the G.O.C. employ Sappers and Miners on small contract works, on making or repairing barrack furniture, etc., so that the artificers may be given every facility at practising their trades. This must not be allowed to interfere with the employment of the companies on field work, or at manœuvres, whenever they are required for such purposes. The C.R.E. will also afford any assistance he can, in instructing S. & M. in the construction of field works and such other military engineering operations, such as demolitions, etc., as may be possible. Where contracts cannot be arranged, the artificers, etc., can be given working pay debitable to the military estimates, and the latter be credited with the value of the work done at M.W. rates.

4. **INSPECTIONS.**—The C.E. will be accompanied by the C.R.E. during his inspection of a company of S. & M. Special forms will be issued for his inspection reports to be prepared on, and his attention will be chiefly directed to the efficiency of the company for carrying out the works that will be required of it in the field, the state of its equipment, lines, workshops, mobilization stores, the arrangements for employing the company during peace, and suggestions for any improvements that in his opinion may be possible.

5. **LEAVE.**—Under this system, when owing to the paucity of officers it is difficult for anyone to obtain the leave due to him, there will be no objection to a M.W. officer acting for a S. & M. officer, or vice versa, up to a limit of 3 months, provided this can be arranged to the satisfaction of the C.E. and the G.O.C., and that no question of pay is raised thereby.

6. **CORRESPONDENCE.**—The present system under which an officer commanding a detached company corresponds direct with the Commandant of his Corps on certain subjects, will remain unaltered.

These proposals were sanctioned in Letter No. 2964 M.W. dated 12-9-1900, from the G. of I. Mily. Department, to the A.G. in Madras.

1901.

Officers.—Lieut. F. D. Irvine was on Field Service in the MAHSUD WAZIRISTAN BLOCKADE operations between November 20th 1901 and January 10th 1902. He was in charge of a special party for blowing up towers and general demolitions.

Employment.—No. 1 company left Secunderabad on 14th January 1901 for employment on contract work on the Kushalgarh-Kohat-Thall railway, and reached Kushalgarh on 24th, but when it arrived no arrangements had been made for the company to start work, and it was detained at Kushalgarh for a week, after which it marched to Camp Tilkan, $9\frac{1}{2}$ miles from Kushalgarh, and work on the railway was commenced on 2nd February. In the $7\frac{1}{2}$ months the company was at Tilkan, the following work was carried out :—

Excavation hard rock 420,464 c.f.

 " mixed soil 10,779

Embankment 207,392

Concrete laid 2,006

Masonry founds 60

On 16th September the company marched for Gandiour, (10 miles east of Thall), and reaching there on 24th was employed till the end of the year on cuttings and embankments.

No. 2 company left Bangalore on 16th January for instructional roadmaking at Nandiroog, and on 13th March entrained at Dodballapur for Khar. Naoshera was reached on 22nd, and Khar on 26th; from 1st October to 25th November the company joined the Swat Moveable Column at Chakdara, during the Chitral reliefs. During the hot weather a detachment of about 16 men was

on the Malakand Pass for work under the C.R.E. The work carried out by the company consisted of:—

Constructing and roofing two masonry tanks, to hold 8000 gallons, constructing head works in the hills, and laying 1½ miles of pipes to the tanks.

Bridging, roadwork, and defences.

Constructing a stiké court, brickwork, lime plastered.

Building fireplaces.

No. 3 company at the commencement of the year was at Shanghai, with the 2nd Brigade of the China Field Force, and was employed on miscellaneous jobs under the Field Engineer. Captain Marshall joined on 17th February from Bangalore, and took over the command of the company. On 13th April the company embarked for Weiheiwei, Lieut. Henderson remaining at Shanghai to assist the Field Engineer. The company reached Weiheiwei on 16th April and camped on Flag Staff Hill. At this place the company was employed on repairs to the landing stages and on road work. They embarked again on 6th June on the *Glengyle* for India; Madras was reached on 24th June, and Secunderabad on 27th.

The following is an extract from the final engineering report by the Brigadier-General R.E.:—

“No. 3 company Q. O. S. & M.

Subadar Devasahayem, noted for carrying out his duties very thoroughly, and having self reliance.”

No. 4 company was at Head-Quarters throughout the year.

No. 5 company left Bangalore on 23rd January for work on the K-K-T railway, and arrived at Kushalgarh on 1st February; Camp Tilkan was reached on 8th February, and during the remainder of the year about 4 lakhs *c.f.* of cutting were completed, and of this most was run into embankments. During the hot weather the temperature in the tents ran up to 115 degrees.

Whilst at Khar No. 6 company constructed a rifle range, and fired the annual course on it; the company left Khar on 9th April for Bangalore, and remained at Head-Quarters for the remainder of the year. The company moved out into camp near Nandidroog for instructional roadmaking in the 1st week of November, and remained there till Christmas.

On 8th March the Burma company left Mandalay for Myitkina, with orders to proceed from there to clear the camping grounds at the various Military Police Posts in the Kachin Hills; when this work was finished the company returned to Myitkina, and was employed there on improving the defences. The company returned to Mandalay on 6th June, having suffered very severely from fever during the latter part of the time at Myitkina.

“A” company—the telegraph section returned to Bangalore from China in August; they erected a line from Tientsin to Pekin, opened about a dozen telegraph offices on the Line of Communications, and maintained a telephone exchange office for the use of all brigades. They also laid a permanent line from Taku to Tientsin and Pekin, distance 200 miles. The following is an extract from the final engineering report by the Brigadier-General R.E.:—“Telegraph sections Q. O. S. & M.—C.S.M. T. J. Keenan in independent charges, has done very good work for the telegraphs. Havildar Chinnasami and Sapper Lazar are noticed for good work.”

The following is an extract from a letter from the G.O.C. British Contingent, China Field Force, to the Adjutant-General in India:—

“Telegraph section, Q. O. S. & M., No. 1776 Naick Kuppasami has done his work particularly well.”

1901. From Head-Quarters, 2 Havildars and 12 Sappers were employed in erecting a telephone line to Sivasamudiram for the Mysore Government, which was carried out very satisfactorily. The Printing Section returned from China on 2-8-1901; during the whole time it was on Field Service it was attached to the Head-Quarter Staff of the British Contingent in China. The Photo-Litho Section returned to Bangalore from China on 7th August 1901; during the whole time the section was in China it was attached to the Intelligence Branch of the British Contingent; the following is an extract from the final engineering report by the Brigadier-General, R.E. :—

“Photo-Litho and Printing Sections, Q. O. S. & M. The following are noticed for good work—Sergeant J. Shedwell, Sergeant M. H. Leonard”

“Engineer Field Park—The following are noticed for good work—Havildar Gnanaprakasam, Madras Sappers and Miners.”

Musketry.—The annual course executed in 1900-01 shewed a considerable improvement over the previous year, due in part to the course having been fired with the Lee-Metford rifle.

Individual	2 % better
Sectional	4 % better
Field Practices	6 % better

Whilst the percentage of marksmen increased from 36 to 39, and that of third class shots decreased from 8 to 6.

The course was altered from 1-4-1901, so as to consist of :—

1st Period—10 rounds, 200 yards, standing

10 „ 500 „ kneeling or sitting

10 „ 800 „ lying

24 points to be made at each distance, before proceeding to the next.

Marksmen, 70 % 1st class 57 %, 2nd class 50 %.

2nd Period—5 volleys, at 800 yards, extended order, any mily. position.

5 rds. ind. 600 „ extended order, any mily. position.

5 „ „ 500 „ extended order, any mily. position, moving target.

5 „ mag. ind. at 300 yards, extended order, any mily. position, 50 seconds allowed.

Ammunition allowed—1st period	30
2nd period	20
Field Practices	70
Total	120.

Owing to Nos. 1 and 5 companies being employed on the K-K-T railway, no course was carried out by these companies during 1901. No. 2 company carried out a modified course owing to the want of a rifle range at Malakand. No. 4 company at Bangalore carried out a special course.

The Corps results at the 1901 S.I.R.A. Meeting were :—

I.A.—Cubbon Cup	2nd
Ohdewala Stakes	3rd
Dewan's Prize	1st, 2nd and 3rd
Sectional Stakes	1st, 2nd and 3rd
Officers' Contest, 200 and 500 yards	1st

The British ranks were quite unsuccessful in this year.

Equipment.—Under I.A.C. 107 of 1901, the powder carried by Service companies in their equipment was abolished, the electric firing apparatus being sanctioned in lieu.

The tin box covered with leather was finally approved by the C-in-C. as the pattern for "Boxes mule R.P." (A.G. in India letter 1720 R.E., dated 5-8-1901).

In October 1901, sets of aluminium cooking pots to be carried in the haversack were approved, to supersede the old brass sets.

Four pontoons with superstructure were completed in the Corps Workshops, and four wagons were under construction.

Instruction, Workshops, and Trades.—Nos. 2 and 4 companies spent two months at the beginning of the year in camp near Nandidroog in hill roadmaking; 4600' of 8' graded road were cut out in 30 working days, and a graded alignment run out to the top of the hill. No. 6 company proceeded to Nandidroog for similar instruction in November and December.

Instructional water supply plant to the value of Rs. 2000 was bought.

The re-roofing of the store shed was completed at Head-Quarters.

At the end of the year there were 10 trained soldiers who had not qualified in any trade.

Mules and Organisation.—Mules for the 1st line equipment of a fifth company were received in February 1901, and Sapper Driver establishment for a fifth company was sanctioned under G. of I. M-D letter 3384 B of 1-10-01.

Reserve.—At the end of 1901 the strength of the Reserve was 37, the remaining 23 vacancies being reserved for Telegraph Reservists, for which volunteers were not forthcoming.

Lines.—The new lines at the F.W. Ground were completed except for one 20-bed block of bachelors' barracks.

Practically no work was done in 1901 on the lines at Secunderabad, owing to the absence of the company on contract work on the K-K-T Railway.

Sanction for the scheme for new lines for the Burma company was delayed unfortunately; the lines had got into a worse state than ever, and needed constant and expensive repairs.

Officers.—Colonel S. Grant handed over the command of the Corps on 3rd August, to take up the appointment of Officiating Chief Engineer, Bengal Command. Lieut.-Col. F. G. Bond C.B. assumed command on the 25th November.

Major B. B. Russell proceeded to Burma on 5th November for special duty in selecting sites, and advising on the defence of Military Police Posts in Upper Burma.

Lieut. F. D. Irvine was appointed Adjutant R.E. of the Southern Army for the Delhi Manœuvres.

Lieut. F. H. Bushell was detailed for plague duty from 14th November under the orders of the Resident in Mysore.

Lieut. E. K. Molesworth was detailed for duty with the camp of H.E. the Governor of Madras at the Delhi camp, and left Bangalore on 12th November.

Employment.—Up to 7-2-1902, No. 1 company was employed on cuttings, embankments etc., on the K-K-T Railway at Gandiour; the company then marched to Gumbat, and for the next month was employed on erecting the girders, forty of 15' span, of the Gandiali bridge, and in boring sleepers, etc., to prepare for platelaying. On 19th March work was commenced on the formation level for an Experimental Field Service line for animal traffic, and practice in laying the frames of this line was begun on 25th. On 1st April Nos. 1 and 5 companies laid one mile on the straight in 2 hours 47 minutes actual work, and 1 mile 1612 yards in 8 hours 2 minutes.

1902. On 4th 1 mile on the straight was laid in 2 hours 11 minutes. On 9th April the company marched to Kushalgarh, and entraining there reached Bangalore on 20th.

No. 2 company remained at Khar till 16th April when it moved to Chakdara for work on the Swat River bridge. On 14th July the company moved up to a camp above Malakand fort and remained there till the concentration of the Chitral Supporting Column on 1st October, when it marched to Chakdara. On 16th October the company marched for Naoshera, and entraining there after a six days' halt reached Ambala on 9th November, to take part in the Delhi Manœuvres and Durbar Camp. During the year the follow work was carried out:—steining well at Khar; road work at Khar, Chakdara, Malakand, and the Amandara Pass; 120' suspension bridge over the tail race at Chakdara; permanent retaining bunds for the Swat River bridge, 12,982 S.F. of boulder revetment, and 28,903 S.F. of boulder pitching; erecting a rum godown, and other miscellaneous building works; and Lieut. Wagstaff and six Sappers supervised the erection of a 192' suspension bridge over the Panjkora River by sepoys and coolies.

No. 3 company was at Secunderabad throughout the year; the re-building of the lines was completed, and various improvements in them were carried out, all drainage being improved, and a gram shed was erected for the M.W.S.

No. 4 company was at H.Q. throughout the year.

Up to 21st January, No. 5 company was completing the cuttings and embankments on which it had been employed during the previous year; from then till the 13th March, the company packed and lifted the 22 miles of line that had been laid by the B.S. & M. whilst from 19th March, the company joined No. 1 company in work on the experimental light F.S. line, and thereafter returned to Bangalore with No. 1 company.

At the end of March the Burma company marched to Maymyo, and after semi-permanently hutting itself, cleared the site for the proposed B.I. barracks. On 26th April a large body of men broke out of the camp, and made a very violent assault on the Civil Police in the Maymyo Bazaar; the case was tried by the Civil Authorities, and 46 men were sentenced to various terms of imprisonment and flogging, but on appeal, 17 of them were acquitted. The company returned to Mandalay at the end of June, and for some months recruiting was suspended, but orders were received before the end of the year to commence recruiting again.

In November two Printing Sections of "A" company proceeded to Ambala and Delhi respectively to join the Delhi Manœuvres.

Musketry.—As Nos. 1 and 5 companies had fired no musketry course in 01-02, they were allowed a double allotment of ammunition in 02-03. At the S.I.R.A. Meeting, No. 5 company won all the company tactical events. The 1st period of the annual course was altered in 1902, and was as follows:—

7 rounds, at 200 yards, kneeling or sitting.	Marksmen	78 points
7 " 500 ditto	1st Class	64 "
7 " 800 lying	2nd "	56 "
7 " 200 standing		

16 points had to be made to qualify at each distance before a man was allowed to proceed to next distance.

The allowance of ammunition was:—1st period	28 rounds
2nd period	20 "
Field practices	72 "

Four rounds at each distance to be fired with the use of cover and of a rest. To qualify as a marksman, a man must have qualified at each distance, as well as having made 78 points in the total.

Previous practice was allowed.

The Corps results in the S.I.R.A. Meeting were:—

B.A.—Officers' Revolver, rapid firing	1st
Revolver Stakes, 20 yards	2nd
50 "	2nd
Inter-regimental revolver team	1st
I.A.—Dewan's Prize,	1st, 2nd, 3rd and 4th
Sectional Firing,	1st and 2nd
Goldsmith's Cup	1st, 2nd, and 3rd
The Orr Cup	1st
Officers' Contest	2nd
Championship	2nd
Hebbal Cup, British and Indian Officers	1st

Equipment.—A complete set of farrier's tools was added to the company engineer equipment in lieu of some of the collar-makers' and saddlers' tools that were rarely used.

The Frame Composing designed by Captain F. W. Saunders, for Printing Sections was approved by the C-in-C.

The four pontoon wagons commenced in 1901 were completed, and four more pontoons and five more wagons were under construction.

Aluminium water bottles were introduced to supersede the patterns of copper and zinc bottles then in use.

Whistles were issued to Naicks, as well as Havildars, G.O.C.C. 116, of 1892.

Workshops, Instruction, and Trades.—Telephone lines were erected between the Quarter Guard, and the Field Works Ground, and also from the latter place to the S. of Is. office, a great economy of time and labour being effected thereby. A 600' steel ropeway was erected as an instructional exercise. At the end of the year there were 12 trained soldiers who had not passed in any trade.

The orders for the course of telegraph instruction were amended under I.A.C. 5 of 1902; the course for officers which had been raised to two years in 1899, was again reduced to 18 months, one officer to be detailed from each Corps in turn. Three B.N.C.O's. to undergo the two years' course, one to be supplied from each Corps.

No Indian ranks on the active list to be employed in the Telegraph Department, but men to be specially enlisted for the telegraph section, to serve three years only with the Colours, and then to be transferred to the Reserve; the Telegraph Department guaranteeing to employ 24 of these Reservists up to the age of 55, providing they were fit and of good character. Such men were allowed to be enlisted at 2" less height than the standard for ordinary Sappers.

Lines.—The re-building of the lines at Secunderabad was completed, and a more sanitary system of drainage carried out there. A gram shed was also built there. The lines of the Burma company narrowly escaped destruction in April, a bachelors' block was completely burnt down, but the other blocks were all saved; the Government sanctioned full compensation for the block burnt. Sanction for the new lines at Mandalay still hung fire.

Reserve.—Owing to the prevalence of plague in Bangalore, the Reserve had not been called up at all since its formation in 1899. The strength at the end of 1902, was 36 Sappers and 7 Sapper Drivers, the remaining 24 vacancies in the establishment of Sappers being reserved for the special telegraph reserve. At the beginning of October Major Russell proceeded to the Bombay Presidency to recruit

1902. for the telegraph section, so as to be able to form the telegraph reserve, and 19 men thus recruited joined during October.

Under letter No. 1780 B. of 27-6-1902 from the A.G. in India, a reserve of Sapper Drivers was sanctioned up to a limit of 18% of the Driver Establishment of the Corps, the Sapper Driver Reservists to be included in the total strength of the reserve allowed for the Corps.

Coronation Contingent.—Subadar Devasahayem, Bahadur, and 15 N.C.O.s and Sappers proceeded to England in May, with the Indian Coronation contingent. Subadar Devasahayem received promotion from the 2nd to the 1st class in the order of British India from 1-1-03.

Presidency Assault-at-Arms, Bangalore.—The Corps won the following events:—

Escalading race, 1st in 1 minute 32 seconds; the time taken by the 2nd team was three minutes five seconds.

Bayonet *v.* Bayonet, 1st 2nd and 3rd.

Bayonet team combat, 2nd.

Best man at arms, dismounted.

Officers' Singlestick, Lieut. F. D. Irvine, 1st.

Tent Pitching, Striking, and Loading, 2nd.

Order of Merit Race, 2nd and 3rd.

Mules.—Equipment mules to complete the sixth service company were received in September 1902, and those for the Burma company were received in November 1902; but only S. and T. Corps scale of drivers was allowed for these companies.

1903. **Employment.**—No. 1 company was at Bangalore throughout the year.

No. 2 company was present at the Delhi Durbar Camp, and moved to Bangalore in January.

No. 3 company was at Secunderabad until November when it moved to Bangalore.

No. 4 company left Bangalore on 19th March 1903 for Sikkim, under Lieut. J. A. Garstin and Lieut. E. K. Molesworth, and reached Siliguri on 26th, marching thence on 27th, Rungpo was reached on 30th, and after halting two days for transport and supplies, the company marched *via* Pakyong to Singtam which was reached on 3rd April. Work was commenced on the Rungpo-Gantok road on 4th, and on 17th Lieut. Molesworth was sent to trace out a new road from Dagego to Dikchu in the main Teesta valley, on the 24th the company received orders to move so as to commence work on this new road, but was not able to move till 4th May for want of transport, and on that day Lieut. Molesworth rejoined the company.

On 2nd May 1 B.N.C.O. and 10 Sappers moved to a place about four miles below Gantok to erect a 50' bridge under the P.W.D., and rejoined the company after 25 days' work on the bridge.

The company camped at Tokul, and started work on the Dagego-Dikchu road on 6th May, a 40' bridge was made with sal road bearers on masonry abutments, and a tension bridge of 135½' span; there was a large amount of rock cutting on this road, and one bad place, where landslips occurred, necessitated the road being eventually zigzagged over the top. The rain during July, August, and September interfered considerably with the work, and the men suffered a good deal from fever, for which the Teesta valley is notorious at that time of year. At the end of May 1 Indian officer, 1 B.N.C.O. and 30 men moved on to the new Gantok road to put up a 105' suspension bridge which

took 18 days including getting out the anchorages. In October, 1903, Government having decided to withdraw the mission from Khambajong, and to send it into the Chumbi valley *via* the Jalep La, the company moved to Roratong to repair the bridge there. Whilst on the Gantok and Dikchu roads, the company had got out 520,045 c.f. of rock, and the same amount of mixed soil, besides doing over 30,000 c.f. of dry stone walling.

The company reached the Roratong bridge on the 25th October; a temporary trestle bridge was first constructed so as not to stop the traffic whilst the old bridge, a cantilever one of 84' span, was dismantled and rebuilt. The dismantling of the old bridge was commenced on 2nd November, and the new bridge was opened for traffic on 12th. On 17th the company moved six miles to Pakyong, and began to mobilize for the advance with the **Thibet Frontier Mission Force**. Pakyong was between 3000' and 4000' above Roratong, and the amount of fever in the company began to diminish at once with the higher altitude. On 26th November Captain Heycock arrived with Lieut. Lewis; half the company under Captain Heycock, with Lieut. Molesworth then moved to Gantok to work on a new road from that place into the Chumbi valley, whilst the other half under Lieut. Garstin with Lieut. Lewis moved to Rungpo, preparatory to joining the column that was to move into the Chumbi valley *via* Grathong and the Jalep La.

No. 5 company was at Bangalore till November when it moved to Secunderabad.

No. 6 company was at Bangalore till September when it moved to Chitral, and for the remainder of the year was employed on minor repairs only.

The Burma company was at Mandalay throughout the year, mainly employed on rebuilding the lines; Lieut Forster with a detachment of 25 men proceeded to the Chinese frontier beyond the Kunlon Ferry in November, to build boundary pillars from there to Bhamo.

An Engineer Field Park, under Major E. P. Johnson with Conductor H. T. Gasson, and a Printing Section proceeded to **Somaliland** on 17th and 19th August respectively, and remained there with the expedition till July 1904.

Organisation.—Under I.A.C. 29 of 1-4-1903, the following changes were made in the establishment of the Corps.

The strength of British officers in "A" company was reduced to one, except when an officer of the Corps should be employed under instruction in the telegraph department; a Ward Orderly was added to each Service company and to the Burma company, whilst "B" company was reduced by 7 Sappers. This gave the following establishment:—

	Serv. Coy.	"A" Coy.	"B" Coy.	Burma Coy.
Coy. Comdr.	1	1	1	1
Coy. Officer	1	—	1	1
B.N.C.O.	2	12	2	3
Subadar	1	—	1	1
Jemadar	2	—	2	2
Havildar	6	4	6	6
Naick	10	4	10	10
Sapper	150	40	143	150
Bugler	2	—	2	2

1903. Ward Ord.	1	—	—	1
Driver Hav.	1*	—	—	—
Driver Nk.	1*	—	—	—
Sapper Dr.	18*	—	—	—
Mules	18	—	—	—
Lascars	1	1	1	1
Bhistis	2	1	2	2
Sweepers	2 (†)	1	2	2
Drivers	6 (‡)	—	—	6
Cooks	—	—	if required	4
Extra Bhistis	—	—		2

And the strength of the Corps as :—

British Officers, Staff	4	Buglers	16
Coy. Commanders	9	Ward Orderlies	7
Coy. Officers	8§	Driver Havildars	5
B. W. and N.C.O. Staff	5||	„ Naicks	5
B.N.C.O.s with Coys.	29	Sapper Drivers	90
Indian Officers	24	Total	1571
Havildars	52		
Naicks	84	Recruit & Pension Boys	42
Sappers	1233	Equipment Mules	126

The detailed organisation of the Burma company was laid down as follows :—

	Havildar.	Naick.	Sapper.	N.O.	B.N.C.O.	Bugler.
Rt. ½ { No. 1 Sect. 1	2	30	1 Subadar }			
Coy. { No. 2 Sect. 1	2	30	1 Jemadar }	1	1	
Lt. ½ { No. 3 Sect. 1	2	30	1 Jemadar }			
Coy. { No. 4 Sect. 1	2	30	1 C. Havr. }	1	1	
Recruit or { 1	2	30		1		
Depot Section { (Hav. Instr.)						

Renaming of Corps, and Renumbering of Companies.—In October 1903 the name of the Corps was changed from Queen's Own Madras Sappers and Miners, to 2nd Queen's Own Sappers and Miners, but the precedence under which the Corps was senior to either of the other Sapper Corps in India was retained. (I.A.O. 181 of 1903).

In December the companies were renumbered under I.A.O. 382 of 1903.

No. 1 Company to become No. 9 Company	
„ 2	„ 10
„ 3	„ 11
„ 4	„ 12
„ 5	„ 13
„ 6	„ 14
Burma	„ 15 (Burma) Coy.
„ A	„ C
„ B	„ D

Musketry.—The annual course was revised so as to consist of :—
1st Period, Part I. Deliberate Independent.

7 rounds, 200 yards, Kneeling or Sitting	
7 „ 500 „ do.	
7 „ 800 „ Lying	
7 „ 200 „ Standing	

16 points to qualify at each distance before proceeding to the next.

*For five companies only. †One extra sweeper per service company detailed for the Field Army, in peace time only.

‡For company not detailed for the Field Army.

§ Or 9 when one is on telegraph course.

|| One departmental, rising to Honorary Commissioned rank.

1903.

1st Period, Part II.

5 rounds, 100 yards, any position, vanishing H. and S. target exposed 4 seconds

5 rounds, 100 " 3 seconds allowed from crouching behind cover, at fixed H. and S. target.

5 " 200 yds. kneeling, vanishing H. & S. target exposed 4 seconds

5 " 150 " any position, moving target

6 " 200 " do. moving target, 2 shots per run.

5 " 200 " do. vanishing H. and S. targets in different places, 4 seconds exposure.

Repetition of any practice in this part permitted, and no qualifying points necessary.

Marksman—105 points, of which 18 are in Part II., and must qualify at each distance in Part I.

1st class—85 points

2nd class—75 points

2nd period.

5 rounds volleys between 800 & 1000 yds. any military position.

5 " independent 700 yards, do.

5 " magazine do. 600 yards, 25 seconds do.

5 " do. do. 500 yards, do. do.

5 " do. do. 400 yards, do. do.

Ammunition allowed:—

1st Period, Part I.—28 rounds

1st Period, Part II. 31 "

2nd Period, 25 "

Field Practices 36 "

Total 120 "

Four rounds at each distance of Part I. to be fired with the use of cover and rest.

The prize money granted by Government was increased from 5 as. to 10 as. per man. (G.O.C.C. 420 of 1-6-1903.)

In the S.I.R.A. Meeting, the Corps did not do as well in 1903 as usual; the following successes being scored:—

I.A.—Bangalore Brewery Prize

Sectional Firing Stakes

Goldsmith's Cup

1st and 2nd

1st, 2nd, and 3rd

1st and 2nd

Assault-at-Arms.—The following were the

Corps results:—

Gymnastics, non-instructors

2nd

Escalading, winning time 1 minute 51 secs.

1st and 2nd

Bayonet v. Lance

1st and 3rd

Bayonet v. Sword

2nd

Bayonet v. Bayonet

2nd and 3rd

Tent Pitching, Striking, and Loading

1st and 2nd

Order of Merit race

1st and 3rd

Singlestick, B. Officers

1st

1 Mile Race

1st, 2nd and 3rd

 $\frac{1}{2}$ Mile Race

1st, 2nd and 3rd

 $\frac{1}{4}$ Mile Race

1st, 2nd and 3rd

100 yards Race

1st and 2nd

120 yards Hurdle Race

1st and 3rd

High Jump

1st and 3rd

Long Jump

2nd

Obstacle Race

1st, 2nd and 3rd

Equipment.—The following telegraph equipment was sanctioned by I. A. C. 3 of 1903:—

1903.

Five miles of permanent line
 Five miles of semi-permanent line
 Twenty miles of light aerial line
 Equipment for 4 telegraph offices, and telephone circuit.

Instruction and Trades.—Regimental Tours for officers, both British and Indian, were started from September 1903, these had not hitherto been carried out in the Corps.

During 1903 the following instructional classes were started :—

"Trades Class"—to consist of 48 N.C.O.s and men usually 8 from each service company, to be placed entirely at the disposal of the S. of I. with a view to their becoming efficient instructors in their trades. The men detailed to be relieved of all guard duty on working days, and to attend only certain specified drills. The course to be usually for one year, but the S. of I. to extend it in special cases to a 2nd year. (C.O. 20 of 1903, and 29 of 1904).

"Special Field Works Class"—to consist of from 2 to 4 N.C.O.'s and men from each company at Head-Quarters to be trained as Instructors. The men detailed to be relieved of all guard duties on working days, but to attend all drills. (C.O. 21 of 1903).

Havildar Instructors in future only to be appointed if they have passed with credit both the Trades and Field Works Classes, special exceptions being made if necessary. (C.O. 22 of 1903).

"Survey Class"—to consist of 1 N.C.O. and 5 men from each company, to be formed annually, and to last usually for 9 months; the men detailed to be on the same footing as regards drill and duty as those on the Special Field Works Class. (C.O. 46 and 91 of 1903). Altered to 3 N.C.O.s or men in March, 1905.

"Preliminary Trades Class"—to consist of all men who have been posted to Service Companies at Head-Quarters but have neither passed in a trade, not been permanently classified as labourers, such men to be available for all duties. Similar classes to be formed in companies on detachment when feasible. (C.O. 288 of 1903).

The annual field works course for service companies was laid down as follows :—

Laying out tools, extending working parties,	
shelter pits, gun pits, etc.	2*
Hasty field defences, stockades, and splinter proofs	2*
Obstacles	2
Gabions, fascines, and hurdles	2*
Revetments	1*
Hasty field redoubt	2*
Magazine	1*
Blockhouse	3
Mining, platforms, and well sinking	2* †
Knotting, use of spars, trestle and frame bridges	5*
Light bamboo bridges	1
Suspension and tension bridges	14
Pile driving, and pier making, in water	6
Trestle and crib work	2*
Hutting	1*
Pontooning and rowing	6
Escalading	1
Demolitions	1*
Charcoal burning	1* †
Railway course	6*
Boring and blasting	2
Total	63

The company will not be struck off duty whilst on the course. 1903.
 Sapper artificers and trades class men will only join for special work, such as suspension bridges. One company each year will be detailed for an extended course of 30 days on railways, and will not do the items marked (*) that year. The items marked (†) can be carried out concurrently with the remainder of the course, so that the course will not exceed 60 working days. The above is a general guide only for Company Commanders who will arrange the actual course to be carried out each year, in communication with the S. of I. (C.O. 292 of 1903).

B.N.C.O.s on first joining the Corps will undergo a general instructional course on the following lines :—(C.O. 300 of 1903).

Scales	3 days
Carpenter's, sawyer's, painter's, and wheelwright's work	20 "
Smith's, farrier's, tinsmith's, and engine driver's work	19 "
Brickmaker's work	7 "
Bricklayer's work	7 "
Quarrying, stonecutting, boring and blasting	4 "
Burning charcoal, and saddler's work	2 "
Preparation of projects, working drawings, estimating	26 "
Storekeeping	2 "
Total	90 "

From 11-5-1903, the old system under which Surveyors were rated as 1st, 2nd, and 3rd Grade, and drew extra pay, viz :—

	Sapper	Naick	Havildar
1st grade	1 As. per diem ...		...
2nd "	2 " " 1 As. per diem		...
3rd "	3 " " 2 " " 1 As. per diem		

in addition to their working pay, was abolished, and all men passing in Survey in future were to receive working pay in the same manner as if passed in any other trade. Men who had already passed under the old rules were to be examined yearly to see that they were still up to the Grade in which they were rated, in order to draw the allowance. (C.O. 148 of 1903).

The normal proportion of trades per service company was altered to the following :—(C.O. 217 of 1903).

Armourers	3	
Basketmakers	3	
Bricklayers and stonemasons	32	of whom at least 12 should be trained as stonecutters.
Brickmakers	16	
Carpenters	36	of whom at least 4 should be trained as wheelwrights, and 2 as coopers.
Chucklers	4	
Clerks and surveyors	8	
Painters	4	
Sawyers	12	
Smiths	24	
Tinsmiths	4	
Engine drivers	4	
Total	150	Sappers.

The following normal scale of tradesmen was approved by the C.-in-C. for the Burma company :—(C.O. 264 of 1903).

Carpenters	60
Sawyers	24
Smiths and fitters	30

1903.	Tinsmiths	6
	Bricklayers	28
	Brickmakers	4
	Chucklers	4
	Painters	6
	Clerks and surveyers	6
	Total	168.

At the end of the year 1903 there were 12 trained soldiers who had not qualified in any trade.

The following circular on the instruction of all ranks was issued by the Commandant in April 1903.

During the summer months, from the 1st April until the 1st October, the following will be the course of instruction for officers at Head-Quarters.

The early morning on Friday will be devoted, as at present, to company drills and exercises.

From 10-30 a.m. to 11-30 a.m. every Friday there will be instruction for British Officers in the Indian Officers' Club.

This time will be given to (a) "Regimental Duties" (b) "Military Law" and (c) "Organisation."

The Commandant will usually take (a) and (b) and the 2nd in Command (c).

2. On Saturdays, there will always be a tactical exercise with opposing forces in the field, unless the weather is unsuitable.

The orders for these exercises will be framed by each officer in turn.

These exercises will, as a rule, occupy from one to two hours, and will be utilized as opportunities for regular reconnaissances by officers. On the completion of the exercise the "cease fire", "officers call" and "retire" will sound, and the companies will at once march home under the senior Indian officers, British Non-commissioned officers falling out. The British officers will join the Commandant who will deliver a short lecture on the spot, with an appreciation of the morning exercise.

On return to the lines, the Commandant will also see the Indian officers, and give them a short instruction.

The exercises will include:—

- (a). Movements as in the field, with a proper service of security.
- (b). Scouting before attack and defence.
- (c). Reconnaissance.
- (d). Attack and defence of a position.
- (e). Dispositions of earthworks in attack and defence.
- (f). Methods of passing defiles and rivers.
- (g). Advanced and rear guards with opposing forces.
- (h). Attack and defence of bridges.
- (i). Attack and defence of villages and enclosures.
- (j). Outposts (day and night).
- (k). Protection and attack of convoys.
- (l). Selection of camping grounds, disposition of force in camp, and attack of camps.
- (m). Any other exercise thought desirable by the Commandant.

The company drills on Fridays should be made the opportunity of giving every Indian officer and Non-commissioned officers personal responsibility, and of supervising and correcting faults.

3. Special lectures will be given from time to time, generally once a month, at which all officers (British and Indian), British Non-commissioned officers, and as many Indian N.C.O.s and men as can understand English, and can be spared, will attend.

These lectures will always be followed by discussions, and will usually take place in the afternoons or evenings.

4. During the drill season the same allotments of time for drills and exercises will be continued, whenever there are no special orders for garrison exercises, and when special courses permit. 1903.

Special lectures will not be given during the drill season, but the 2nd-in-Command will occasionally examine officers in Military Law and Organisation, and will issue printed instruction papers of questions and answers to all officers.

The Commandant's Saturday instruction to British officers (after exercises in the field), and to Indian officers in barracks, will be given as usual in the drill season, whenever possible.

Library.—A Corps Professional Library was started in June 1903 to consist of both military and engineering books, the Commandant sanctioning a grant of Rs. 600, and an annual allowance from workshop funds, for this purpose.

Dress.—The badges of rank of Havildars were altered under G.O.C.C. 190 of 1903, to—

Colour Havildar—3 bar chevron with grenade and crown in gold, on a red ground.

Havildars—The same without the crown.

In September 1903, shoulder badges of "Q. O. S. & M." were taken into use by all Indian Ranks, in Khaki.

Lines.—An advance of Rs. 20,000 was received from Government to enable the Corps to build new lines for No. 15 company at Mandalay, and the building was commenced early in the year.

Pay, Allowances, and Clothing.—Compensation in lieu of Khaki Clothing was abolished for those enlisted after 31-12-1903, by I.A.O. 384 of 1903.

Arms.—No. 15 (Burma) company received M.L.E. rifles during February 1903 in place of the M.L.M.

Officers.—Lieut.-Colonel F. G. Bond, c.b., left the Corps on 6th May, to take up the appointment of A.Q.M.G. of the Panjab command. 1904.

Lieut. J. A. Garstin was killed in the breach, whilst leading the assaulting column on Palla village near Gyantse on 26th May.

Honours and Distinctions.—Extract from the Gazette of India, Military Department, Simla, 3-6-1904:—

* * * * *

London Gazette, No. 513, the following extracts are published for general information:—

His Majesty has been pleased to approve of the following appointments to regiments of the Indian Army.

Honorary Colonels to be Colonels-in-Chief

* * * * *

2nd Queen's Own Sappers and Miners—HIS MAJESTY THE KING.

* * * * *

To be Honorary Colonels

2nd Queen's Own Sappers and Miners—General Sir H. N. D. Prendergast, v.c., g.c.b., R.E.

and the following letter was received from General Prendergast:—

Richmond,
18th May 1904.

My Dear Colonel,

You are aware that in last week's Gazette it is announced that the King is Colonel-in-Chief, and I am appointed Honorary Colonel of the 2nd Queen's Own Sappers and Miners.

I am much gratified at the compliment paid to the Corps by the King, and I feel honoured in being again connected with a Corps in which I served for many years. I trust that you will notify to the officers

1904. and men of the Corps my satisfaction in being again associated with them. I am sending a bowl as a present to the officers, and I have written to express the gratitude of the "Queen's Own" to His Majesty for becoming Colonel-in-Chief, and send you a copy of my letter. I hope that these will be generally approved. With best wishes for the honour and glory and welfare of the Corps.

I remain,

Yours very sincerely,

H. N. D. PRENDERGAST,

From General Sir H. N. D. Prendergast, V.C., G.C.B., R.E.

Heron Court, Richmond, Surrey.

18th May 1904.

Dear Lord Knollys

The 2nd Queen's Own Sappers and Miners are deeply sensible of the honour His Majesty has conferred upon the Corps in becoming their Colonel-in-Chief, and humbly thank His Majesty for his gracious act. May I beg you to submit the expression of their gratitude to His Imperial Majesty the King.

I am, Yours faithfully,

H. N. D. PRENDERGAST, General.

Honorary Colonel, 2nd Queen's Own Sappers and Miners.

Windsor Castle,

25th May 1904.

Dear Sir Henry Prendergast,

I have had the honour of submitting your letter to the King, and I am commanded to inform you in reply, that His Majesty has had much pleasure in becoming the Colonel-in-Chief of the Queen's Own Sappers and Miners.

Believe me, Yours,

KNOLLYS.

Employment.—Nos. 9, 10, and 11 companies were at Headquarters throughout the year, but 1 section of No. 9 company proceeded to Chitral in September.

On 1st January, No. 12 company was employed as follows:—

Half a company was on roadwork at Chumbi, less a detachment under Lieut. Lewis which had accompanied the first advance to Tuna; the other half company was in camp near Gantok at work on the Gantok-Lagiap road. Lieut. Birney had joined the company on 28th December 1903, and Lieut. Molesworth being supernumerary to the strength of the company, left for Bangalore on the 20th January. On 29th January the Left Sappers arrived at Chumbi for work on the Chumbi-Rinchingong road, whilst the Right Sappers moved to Lingmatham for road-work there. On 6th February, work was commenced on the Supply Godowns at Chumbi, and a week later the bulk of the Right Sappers moved to Chumbi to assist.

On 21st February the company moved to Langram to improve the road between Yatung, and the Jalep La. On 3rd March, the company commenced to widen the road between Champethang and Rinchingong to 6', and after 16th April the company moved to work on the road between Lingmatham and Gautsa. On 16th May, Lieut. Garstin with 20 men joined a mixed half company under Captain Sheppard, and proceeded to Gyantse, and the former was killed in the attack of Palla village on 26th May. General Macdonald said of him—"He was a most gallant officer, and had done first rate work all through in Sikkim and Thibet". Lieut. Birney took his place, and he and the detachment were present at the operations round Gyantse and at the taking of the Jong. On 27th May the company returned to Chumbi for work on the

B. and N. Field Hospitals. On 20th June they were employed on the road between Lingmatham and Gautsa, but half a company was detached under Lieut. Lewis on 28th to do garrison duty at Phari. Lieut. Molesworth rejoined the company on 22nd June. On 18th July 1 I.O. and 20 men left Phari to join the detachment at Gyantse, and the rest of the company moved to Gautsa for work on the road there. The Gyantse detachment rejoined on the 5th September, they had assisted in demolishing the Jong there, had built a hospital, and repaired a bridge. On 18th September orders were received to return to Bangalore which was reached on 6th October. Lieuts. Lewis and Birney left the company at Siliguri on 1st October.

Major C. H. Heycock was mentioned in despatches.

No. 13 company was at Secunderabad throughout the year; a permanent kiln was built, and about a lakh and a half of bricks were burnt; the target store was re-roofed; and the company was also employed on clearing rock near the Entrenchment, and in making about 1000 yards of a riding road, that entailed a good deal of blasting.

At the commencement of the year, No. 14 company was at Drosh, with one section at Chitral; during January and February, they were employed on buildings at both places; during March and a part of April the Thishi-kuh suspension bridge was dismantled (the bridge was 370' span), one of its trestles which had slipped was hauled back and the bridge re-erected with additional windguys. The upper bridge on the Shishi-kuh, a cantilever of 40' span, was also repaired. A wire tramway of 600' was thrown across the Chitral River in April. On 15th April the company moved into camp, the section from Chitral rejoining, and worked on the diversions of the Chitral-Lawarai road, this necessitated some heavy rock cutting, a bridge of 50 span with 3 masonry piers, and 3 smaller bridges. On 25th August the company returned to Drosh and on 6th September, a party under Lieut. F. H. Bushell moved up to Mastuj to repair suspension bridges at Sanoghar, Mastuj, Gasht, and Harchin on the Chitral-Thandu road. This party returned to Drosh on 28th September, after a march of 210 miles. On 17th October the company left Drosh for Bangalore, reaching Naoshera on 1st November and Bangalore on 10th.

At the commencement of the year Lieut. Forster with 25 N.C.O.s and men of No. 15 company was erecting boundary pillars on the Burma-Chinese frontier, from the Kunlon Ferry on the Salween to the Taiping River; in all 55 pillars were built, and the detachment returned to Mandalay on 23th April, having been away for 5½ months. A similar party under Lieut. C. W. Bushell left Mandalay on 7th November for Myitkina to complete the northern section from Manany Pum, (altitude 11,000') to the Taiping River. A small detachment under a Havildar was employed at Maymyo for six months on the markers' butts etc., of the B.I. Range.

In Mandalay the company carried out contract work under the P.W.D. for the water supply of the cantonment, laying nearly 4 miles of 4" pipes, constructing standpipes etc., and fixing up boilers and pumps. On 19th December the company proceeded to Maymyo for field training and manœuvres.

Appointments—The ruling laid down under I.A.C 151 of 1898, allowing the command of a company to be held by a Major was cancelled in 1904.

Musketry.—Under I.A.O. 108 of 1904, good shooting badges were authorised for S. and M. on the same scale as for Indian Infantry.

The annual course was revised as follows by I.A.O. 110 of 1904, to come into force from 1-4-1904:—

1904.

The allowance of ammunition was:—

Sappers—Part. I.	35	Reservists—	28	Sappers Drivers—	14
Part. II.	46	„	15	„	20
Fd. Prac.	39	„	7	„	—
Total	120	„	50	„	34

Part I.

- (i). 7 rounds, 200 yards, kneeling or sitting, 3rd class target.
(ii). 7 „ 500 „ kneeling or sitting, 2nd „
(iii). 7 „ 800 „ lying 1st „
(iv). 7 „ 1000 „ lying 1st „
(v). 7 „ 200 „ standing 3rd „

Part II.

- (vi). 5 rounds, 200 „ Mag. Ind. at H. and S., exposed 4 seconds
(vii). 5 „ 200 „ „ at H. & S., firer 3 sec. exposure
(viii). 5 „ 250 „ „ at H. & S., exposed for 4 sec.
(ix). 5 about 200 „ „ Moving target, 2 shots per run
(x). 6 about 250 „ „ „
(xi). 5 about 200 „ „ H. and S., different places, exposed for 4 seconds.
(xii). 15 about 400 „ „ H. and S., 1 minute allowed.

The following qualifying points to be obtained before a man can fire at the next practice:—

- (i). 18 (iv). 10
(ii). 18 (v). 16
(iii). 16 Part II, 20

The Classification to be as follows, and repetition allowed to count: Marksman 125 of which 30 points must be in Part II.

1st class 110

2nd class 100

Four rounds at practices i, ii, iii, and v, and all 7 rounds at iv. to be fired with a rest, and from behind cover.

Reservists to fire practices i, ii, iii, iv, vi, vii, and ix.

Drivers to fire practices i, ii, vi, vii, ix, and x.

Under I.A.O. 197 of 1905, Part II. was increased to 47 rounds, and practice ix. to 6 rounds, whilst Field Practices were reduced to 38 rounds. Practice viii. was altered to—

5 rounds at 250 yards. at falling plates, 12" square, in 30 seconds. Reservists were allowed 56 rounds for Field practices, their practices in Parts I. and II. remaining the same, as they only had one training in two years.

Under I.A.O. 534 of 1905, the qualifying points were reduced to 12 at iii, 8 at iv, and 16 at Part II., so as to make the course rather easier where the Sappers had a smaller allowance of rounds in the year than Infantry or Cavalry; and to qualify for marksman or 1st class, a man must make the qualifying points at each distance in Part I.

Under I.A.O. 534 of 1906, the practices to be carried out by Drivers were altered to i, ii, vi, vii, viii, and xi.

Under I.A.O. 153 of 1908, the allowance of ammunition was made the same as for the Infantry and Cavalry, viz:—

Part I.	35
Part II.	47
Fd. Practices	68
Total	150

The qualifying points were raised—in iii. to 16, in iv. to 12 and in Part II. to 20 whilst in iv. any hit on the target was to count 3 points.

Under I.A.O. 649 of 1904, the allowance of ammunition to B. and I.O.s was raised to 82 rounds.

No. 13 company won the "Rapid Firing Stakes", a tactical event at the H.R.A. Meeting, against eight Regimental teams. 1204.

No. 14 company carried out a special course of Musketry, when the company was in camp at Ziarat.

Equipment.—Jointed bamboo poles were introduced for the light F.S. aerial telegraph line. The Jumelle hand camera was added to the equipment of each Photo section. A heavy press was added to the Litho equipment for use at the Base.

Instruction, Workshops, and Trades.—The following alterations were made in February 1904 to the Corps instructional circular issued in April 1903 by the Commandant:—

From 1st April to 1st September.

At 10-30 a.m. Mondays, all British officers will attend for instruction in the following subjects—

- (a). Regimental Duties.
- (c). Duties in the Field, (i), (ii), and (iii).
- (d). i. Military Engineering, Tactics, and Topography.
ii. Military Law
iii. Organisation and Equipment
iv. Military History

The instruction in (a) and (d) iii. will usually be by written papers.

The Commandant will usually take (a); (c) iii; (d) i, tactics; (d) ii, iv.

The S. of P. (d) iii

The S. of I. (c) i, ii; (d) i, Military Engineering and Topography.

The S. of I. will occasionally give lectures on tactics, or military history, and the S. of P. on any equipment of interest.

The tactical instruction will also include lectures with discussions, tactical schemes on maps, war games, and instruction in the field.

2. On Saturdays the tactical exercise, with opposing forces in the field, will occasionally be by night. All subordinate orders will be written and sent in after the exercise. These exercises will as a rule occupy 5 to 6 hours, and officers will be practised in reconnaissance during them. On return to the lines an officer will give a short lecture to the Indian Officers and B.N.C.O.s on the exercise.

These exercises will also include:—

- (m). Route marches.
- (n). Defence of railways.

Particular attention will be given to scouting, and section leading. Judging distance will be practised, and the distances checked with the mekometer. All officers, B.N.C.O.s, and intelligent Indian N.C.O.s and men will be practised in semaphore signalling. All movements in the field to be controlled by whistle and signal. The assistance of guns and cavalry will occasionally be obtained for these exercises.

3. Lectures will be given about once a month at 11 a.m., on Mondays, which all officers, and B.N.C.O.s will attend.

5. From 1st September to Christmas, when the country is under crops, the drills and exercises will be such as can best be arranged under company arrangements; the last two before Christmas being ceremonial.

6. From 1st September to end November, a regimental tour will usually be held every Saturday; on special occasions, all available Indian officers will do a tour, usually in combination with actual dispositions of the companies; officers will be told off to separate commands of forces or units, and the time allotted for the tour will be that of the operation under service conditions; all officers will hand in the briefest possible narrative in pencil, shewing time, orders given, dispositions, reports of positions and ground, and enemy's supposed

1904. dispositions, these will be criticised by the Director on the ground. The forces employed will be generally about a battalion, a battery, and a squadron, with such supply and equipment convoys and transport as may be considered reasonable. These exercises will include:—

Reconnaissances of positions.

Outpost exercises with opposing forces.

Disposition of a force in defence, with and without entrenchments.

Attack of the same position.

Scheme for attack by a larger force.

Defence of lines of communication.

Project for the defence of a section of railway.

Selection of bivouacs, and piquets; attack of the same.

Orders and arrangements for entraining and detraining a force as above, plus a company of Sappers.

Passage of a river by the same force, including bridging expedients, and dispositions of the force on the further bank in the presence of the enemy.

Distance ride, and road reconnaissance, with report on position of enemy.

From January to March, after the District manoeuvres are over, special railway courses will generally be arranged, but on Fridays and Saturdays companies will be at the disposal of Officers Commanding them unless special orders are issued. The instruction of Officers and B.N.C.Os. after breakfast on Mondays and Saturdays will continue as usual.

Four men went through a three months' course of moulding in the Mysore Government Workshops, and casting was placed on a permanent footing in the Workshops.

"Saddler" was introduced as a trade, instead of Chuckler, and men not of the Muchi caste took up the trade.

Artificer ratings were introduced in the Corps under No. 974 F. of 26-3-04, from the G. of I., M.D. to the A.G. India, and the following scale allowed—5 of "A" rate, 31 of "B" rate, 102 of "C" rate, these numbers to include the two of "B" rate, and three of "C" rate already allowed, but not to include those sanctioned for the Burma Company. At the same time it was laid down that a recruit on joining would draw no working pay until passed in drill and musketry, whilst on Field Works he would receive $\frac{2}{3}$ the 3rd rate, and that he could not be advanced to the 2nd rate until he had passed both in Field Works and in a trade. Also that when not employed on their trades men should draw $\frac{2}{3}$ of their rating, and not one rate lower as before.

The Superintendents of Instruction of the three Sapper Corps met at Kirkee, and compiled a schedule of Trade Qualifications to be applicable to all three Corps, *Vide* Appendix I.

The whole of the boxes, and all stores of local manufacture, in Table 10, E.E. Tables, 1898, were made up in the workshop, to replace those sent with the Engineer Field Park to Somaliland, and were despatched to the Karachi Arsenal. The boxes and articles of local manufacture to replace those taken by the Printing Section to Somaliland were also made up and issued. This work somewhat delayed the construction of the four remaining pontoons, *i.e.* two of R.P. pattern, and two Bipartite ones.

At the end of 1904, there were 14 trained soldiers who had not qualified in any trade.

Reserve.—Under letter No. 1699 B of 30-4-04, from G. of I., M.D. to A.G. India, the strength of the Reserve was raised to 110, and the Commandant was authorised to order men specially enlisted for three

years' colours service, to the reserve at the expiration of their three years, or to discharge them if they did not desire transfer to the Reserve. Under I.A.O. 275, of 1904 it was laid down that men should not have less than three years' service, or be more than 32 years of age, at the time of their transfer to the Reserve, and the pay was altered to Rs. 2 per month, with full pay during training. 1904.

Under G. of I., M.D. letter No. 3743, B of 26-10-04, the Reserve was increased to 274; (ruling subsequently published in I.A.O. 230 of 1905); and No. 3659 B dated 25-11-04, from D.A.G. M.C. laid down that Sapper Driver Reservists were to be included in this 274, but that the 18 per cent. of the Driver establishment must not be exceeded.

The strength of the Reserve at the end of 1904 was 108, an increase of 40 during the year.

Lines.—Under G. of I., M.D. letter 1760 C. of 15-7-1904, to the A.G. in India, the number of families allowed to live in the lines was altered from 75 per cent. of strength to "All N.C.O.s and 33 per cent. of Sappers" at Bangalore, but existing lines could be fully utilized.

A further loan of Rs. 9760 was received from Government for the new lines of No. 15 company, and by the end of the year quarters for three Burnan Officers, and five blocks for Sappers had been completed.

Pay and allowances.—Under I.A.O. 206 of 1904, Marching Batta was abolished for all soldiers enlisted after 1-4-1904, with the exception of the 2nd Q. O. Sappers and Miners, who were specially exempted from the ruling of this order.

Under letter No. 779 R.E. of 15-4-04 from the A.G. in India, men not employed on their trades were to draw $\frac{3}{4}$ of their rating instead of 1 rate lower as previously.

Under letter No. 1075 F of 18-4-04 from G. of I., M.D. to the A.G. India, Majors with the Sappers and Miners were granted R.E. regimental pay, instead of the I.A. rate previously drawn by them, from 21-3-04.

Compensation in lieu of puggris to buglers, and the free issue of blue serge putties were abolished by I.A.O. 14 of 1904.

Band.—The Drum and Fife Band that had been started in 1875 was abolished on 1st October 1904.

Officers.—Lieut.-Col. F. J. Anderson having been appointed Commandant of the Corps, joined on 6th April 1905. 1905.

Lieut. Kidner proceeded to Madras on 29th November, en route to Maymyo, to join the telegraph course.

Employment.—Nos. 11, 12, and 14 companies were at Headquarters throughout the year.

No. 3 section of No. 9 company was in Chitral under Lieut. Agnew till 17th October, when they were relieved by No. 2 section under Lieut. Prince. The remainder of the company was at Bangalore till 1st October, when they sailed to Rawal Pindi, and were joined there by No. 3 section on 2nd November, this section had suffered a good deal from fever at Drosh. After arrival at Pindi the company was employed on preparing the camp for the review by H.R.H. the Prince of Wales, and in commencing the new lines at Pindi for the company. The section in Chitral had been employed on:—building stables, road work and water channels, constructing blockhouse at Pulengol, and erecting a telephone line from Drosh to Ziarat. Three sections of the company took part in the Pindi manœuvres from 4th to 7th December 1905, forming a part of the Divisional Troops of the 2nd Division, and they were present at the Royal Review on 8th December.

No. 10 company was employed on platelaying for about 18 miles of the Morapur-Dharmapuri light railway from 10th January to

1905. 21st March, and with the exception of that time was at Headquarters throughout the year.

No. 13 company was at Secunderabad throughout the year; among other work, a hockey ground was levelled and made for the Gymkhana, and work was undertaken on a new polo ground; a new target store was also built.

At the commencement of 1905, Lieut. C. W. Bushell and 25 men were erecting boundary pillars on the Chinese Frontier, whilst the remainder of No. 15 company was in camp at Maymyo; the company moved out on the 3rd January to prepare roads and water supply for manœuvres, and after taking part in the manœuvres, returned to Mandalay on 6th March. In the Mandalay Brigade Orders commenting on the Manœuvres, the company was the only unit specially mentioned for good work. Lieut. Bushell's party returned to Mandalay on 1st March after an absence of 4 months, during which they had erected 39 pillars in the Myitkina and Bhamo districts at altitudes up to 11,000'. In Mandalay the company was employed principally in rebuilding the Lines, two more blocks for Sappers having been erected by the end of the year. On 18th December the company moved out into camp for a 3 weeks' course of bridging.

"C" company carried out more telegraph and telephone work this year on the Bangalore manœuvres than had been previously attempted, and with the greatest success. Four sections were employed, and laid tactical cables connecting up the G.O.C. with his guns, flank attack, etc., the lines often being 7 miles long, and after reeling up, the lines were generally laid again to connect outposts with the bivouac for the night; two Government telegraph offices were also opened, worked entirely by Sappers; on 23rd November a section of 1 B.N.C.O. and 20 N.C.O.s and men under Lieut. F. H. Bushell proceeded to Rawal Pindi for the manœuvres there; and on arrival, Lieut. Bushell was appointed Director of Telegraphs for the Southern Army; this section returned to Bangalore on 23rd December.

The Litho School brought out a new $\frac{1}{2}$ " map of the country for 20 miles round Bangalore, in three colours.

Organisation.—Under I.A.O. 244 of 1905, the following cooks were allowed per half company, excluding No. 15 company, for men messing together.

From 40 to 69 men, 1 cook; over 69, 2 cooks and 1 Bhisti.

Musketry.—No. 11 company won the "Skirmishing Team competition" at the S.I.R.A. Meeting.

No. 13 company won the 1st prize in the R.E. Rifle Association match.

A miniature range was constructed in the workshop enclosure, but it was closed in 1908, as it was found that occasionally bullets went beyond the enclosure, and after that all short range practice was carried out at the Old Volunteer Butt, at the head of the upper Ulsur Tank.

During the year the Corps range at Hebbal was converted from the trolley system into a gallery range, with six targets.

Arms.—Nos. 9, 10, 14, and "C" Companies were re-armed with the short L.E. Rifle in 1905, No. 11 company in 1907, and Nos. 12 and 13 companies in 1908, whilst "D" company did not receive the new rifle till November 1909, and No. 15 company still has the long rifle.

Reserve.—At the end of the year, the strength of the Reserve was 238, sixty-one men having been received from Infantry regiments, and these latter were trained for two months. The reserve of Sapper Drivers had been brought up to full strength.

Instruction, Workshops, and Trades.—Only 36 men had passed the artificer ratings, since they were introduced in 1904; but all likely men in the Preliminary Trades Class, on passing the 2nd rate, were transferred to the Trades Class, and retained under instruction for a further period. 1905.

From the 1st February, 1905, the Trades Class, started in 1903, was re-constituted as follows:—

To consist of 48 men from all companies except "C" and No. 15; 32 men to be selected by Company Commanders, and 16 by the S. of I. from the Preliminary Trades Class. They will not attend Field Works, except for special work. (C.O. 221 of 1905).

A Naick and a Sapper of No. 15 company were sent over to Bangalore in April 1905, for a course of survey; this was the first time that any of the Burman company had come to Bangalore.

A small engine to work a circular saw was obtained for the workshops of No. 15 company.

Two pontoons, R.P., were completed during the year in the Corps Workshops, and two bipartite pontoons were nearly completed, whilst work had been commenced on the remaining nine pontoon wagons.

At the end of 1905 there were 12 trained soldiers who had not qualified in any trade.

The Survey School was handed over by the O.C. "C" company to the S. of I., the O.C. "D" company to act as the assistant of the S. of I. for this school.

Lines.—It having been decided that a company should in future be located at Rawal Pindi, with one section in Chitral, lines for three sections were commenced at Rawal Pindi.

Government gave a grant for the construction of these lines, and a small allowance for their maintenance; but this being insufficient, rent was charged to all ranks, to form a detachment hutting fund.

No. 15 company, whilst in Mandalay, was employed principally on building the new lines.

Pay and Allowances, and Clothing.—Under I.A.O. 519 of 1905, a clothing allowance was introduced to supersede all issues of clothing, half mounting allowance, and compensation for clothing; the new rates being as follows:—

On enlistment—Sapper, Rs. 40.

Recruit Boy, Rs. 4.

Annually—Indian Officer, Rs. 8.

Ranks wearing gold chevrons or badges, Rs. 10.

Other ranks, Rs. 9.

Recruit Boys. Rs. 3.

Compensation was also granted for the abolition of the various free issues of clothing to those who had been entitled to them before they were abolished for all new enlistments under I.A.O.s 384 of 1903 and 14 of 1904.

A worsted badge of crossed whips and spurs, and a grant of Rs. 4 was sanctioned annually for the Sapper Driver in each company who kept his mule and harness in the best order. (G. of I., M.D., 1803, C. of 10-8-1905 to A.G. India.)

Under I.A.O. 711, of 1905, great coats were no longer to be issued to reservists, coats warm British being drawn from the A.C.D. in lieu, as required.

"Shorts" were taken into use for work and manœuvres from January, 1905.

Assault-at-Arms.—The following were the successes at the Assault-at-Arms held at Bangalore:—

1905.	Gymnastics, (Instructors)	1st
	" (Non-Instructors)	1st
	Order of Merit Race,	1st and 3rd
	Escalading,	1st and 2nd
	Lance v. Bayonet,	2nd and 3rd
	Tent pitching, striking, and loading,	1st and 2nd
	Bayonet v. Bayonet,	3rd
	Best man-at-arms, dismounted.	
	At the Secunderabad Meeting, No. 13 company was second in the Bayonet team competition.	

1906. **Officers.**—Subadar-Major Shaikh Ismail was promoted to the 1st Class of the Order of British India, with the title of Sardar Bahadur, from 5th September 1904. He was appointed an Indian Aide-de-Camp to H.R.H. the Prince of Wales, during the tour of H.R.H. in India, and received the Victorian medal. The following is a copy of a letter from Major-General Sir Stuart Beatson, C.B., K.C.S.I., to the Commandant—

“I am directed by H.R.H. the Prince of Wales to express to you his satisfaction at the manner in which Subadar-Major Shaikh Ismail carried out his duties as Indian Aide-de-Camp. I am glad to tell you that H.R.H. was pleased to decorate Subadar-Major Shaikh Ismail with the Victorian medal, as a mark of appreciation.”

Subadar-Major Chinnasami was appointed to the 2nd Class of the Order of British India, with the title of Bahadur, from 26th November 1905.

Employment.—Nos. 11, 12, and 14 companies were at H.Q. throughout the year.

No. 2 section of No. 9 company was relieved at Drosh on 17th October, the remainder of the company was quartered at Rawal Pindi throughout the year; at Pindi the company was mainly employed on building the lines. The detachment in Chitral carried out road work, constructed 3 bridges each of 20' span, erected 18 miles of telephone line from Drosh to Ziarat, and was employed on various small buildings.

No 10 company was at Bangalore till 15th October when it moved to Secunderabad by rail, relieving No. 13 company which left there for Bangalore on 18th October; whilst at Secunderabad the latter company erected a shed for turning lathe, drilling machine, and painters' and saddlers' shop. The hay shed was re-roofed, and some blasting carried out in connection with diverting a nullah in the construction of the new polo ground.

There was an outbreak of cholera in June and July, and the company moved out to segregation camp for four weeks, the company lost one Lance-Naick and two Sappers from cholera.

No. 15 company returned from its bridging camp to Mandalay on 6th January, and moved out again on 22nd for Divisional manœuvres beyond and near Maymyo, returning again on 7th March. The company was specially mentioned in Mandalay Brigade orders for good work on manœuvres and was the only unit mentioned.

The men were mainly employed during the year on building the new lines. On 13th December the company moved to Kyauktalon on the Irrawady, 25 miles below Mandalay, to prepare for a Camp of Exercise that was to be held there the following month. Lieut. Bushell with 25 N.C.O.s and men left Kyauktalon on 21st December for Lashio to erect boundary pillars on the Chinese frontier from a point south of the Wa country to the Mekong.

Three N.C.O.s and two men were employed on Cantonment Surveys, in various parts of the 9th Division, from February to December, under the Surveyor-General in India. 1903.

Musketry.—Captain J. B. Barstow presented a sub-target apparatus to the Corps.

Under I.A.O. 525 of 1906, further repetition of practices of the annual course was forbidden once the qualifying points at each distance in Part I., and the qualifying aggregate in Part II. had been obtained.

The following competitions were won during the year:—

At the S.I.R.A. Meeting—

The Long Range Competition, 1st and 2nd.

The Skirmishing team competition.

In the R.E. Rifle Association—

The Rapid Fire Competition.

The Challenge Shield for 1905, with a team prize of £24, and 8 bronze medals.

Reserve.—Under I.A.C. 235 of 23-4-06, the establishment for the reserve was raised to 304; and at the end of the year the actual strength was 292, an increase of 54 in the year, of whom 4 were received from the Infantry, these latter on joining were trained for two months.

Equipment.—Experiments were carried out with the light Austrian cable, 8 lbs. to the mile, (used by the Japanese in the Manchurian war), during the attack on positions, and also with this cable and the Molyneux equipment. Two cavalry telephones were purchased, and were most useful for field work.

A light drum for a man on foot to pay out and reel up the 8 lb. cable was made up and found to work most successfully, several of them were then made for other Corps who had telephones.

The Kachin dah, with leather scabbard, was introduced for No. 15 company, to be carried in marching and field service order.

Ironside wirecutters were introduced into the company equipment to replace the Holtzapffel, thus enabling double the number to be carried. Nobel's octuple electric detonators with leads were substituted in the company equipment for Electric Detonators No. 13. A leather covered cane case was tried in lieu of boxes guncotton wet, in loads 31 and 32 of the company equipments, this box to contain air tight cases containing the wet guncotton.

Instruction, Workshops and Trades.—A probationary artificers' class was instituted in July, only 44 artificers having qualified since the increase in artificer ratings in 1904.

Six N.C.O.s. and men of the Burma company were sent over to H.Q. for instruction in survey, telephony, photography, and gymnastics. A "Uganda" printing press, which was brought back from Somaliland, was purchased for the use of the Printing School.

Five more pontoon wagons were nearly completed, leaving only four more to be made to complete the authorised number. The pontoon trestles were fitted with the new Chatham clamping screw, and steel shoes were substituted for wooden ones, thereby saving weight.

An experimental American "Fireless Cooker", and a Japanese pattern "Water boiler" were made up for trial in the Brigade.

At the end of the year there were 12 trained soldiers who had not qualified in any trade.

Lines.—At Rawalpindi the following buildings of the company lines were completed by the end of the year:—

Two blocks bachelors' quarters.

One block of married quarters.

Two quarters for Indian officers.

1906.

Two cooking sheds, one bathroom, one latrine.

Mule lines, and bhusa shed.

By the end of November two more blocks for N.C.O.s and men, making a total of nine, had been completed in the lines of No. 15 company, and the whole of the money advanced by Government had been expended, so that the work on those lines had to be stopped.

Assault-at-Arms.—The Corps gained the following successes at Assault-at-Arms held at Bangalore:—

Gymnastics, Instructors,	1st, 2nd, and 3rd.
Order of Merit Race,	1st and 2nd.
Escalading race,	1st and 2nd.
Bayonet team combat,	2nd.
Tent pitching, striking, and loading,	1st and 2nd.
Bayonet v. bayonet,	2nd.

Appointments.—Under I.A.O. 16 of 06, all appointments of British officers with the Corps were classed as Staff Appointments, for the purposes of regulating staff pay.

Under I.A.O. 480 of 1906, the Drill Havildar was in future to be styled "Havildar Major", and thereby took precedence of all other Indian N.C.O.s in the Corps.

Pay and Allowances.—Under I.A.O. 556 of 1906 the Kit Money payable to recruits was increased from Rs. 40 to Rs. 60, and Rs. 5 was added to the annual clothing allowance of all Indian N.C.O.s and men.

R.E. N.C.O.s Provident Fund.—A Provident Fund for the B.N.C.O.s was instituted in the Corps, to which British Officers and N.C.O.s subscribe; an N.C.O. on leaving the Corps to draw a proportion of the subscriptions he has paid, and a really useful donation to be provided for the widow and children in case of an N.C.O. dying whilst in the Corps.

1907.

Officers.—On the recommendation of H.E. the C.-in-C., the Government of India sanctioned an Assignment of Land Revenue, Rs. 400, near Vellore in the North Arcot District, to Pensioned Subadar-Major and Honorary Captain Shaikh Ismail, Sardar Bahadur, late 2nd Queen's Own Sappers and Miners, on 24th January 1907.

Subadar-Major Chinnasami, Bahadur, received the Durand Medal during 1907.

Employment.—No. 4 section of No. 9 company, relieved No. 1 section at Drosh during September. The other two sections proceeded to Murree and the Galis on 12th May, returning to Rawal Pindi on 19th August; in Pindi work was carried on on the lines; at Murree, the sections were employed on building, road making, rebuilding an aqueduct bridge on the pipe line near Changla Gali, and in levelling a recreation ground on the hillside at Cliffden; in Chitral the sections were employed on bridging, road work, and in dismantling and reconstructing the telephone line from Drosh to Ziarat. One N.C.O. and four men were sent from Rawal Pindi to Dera Ismail Khan in connection with holding a demolition class there.

No. 10 company was at Secunderabad throughout the year; a pontoon shed was built on the Husain Sagar Tank, and supplied with 1 pontoon, 28 barrels, etc., a cookhouse was built and a miniature range constructed, and brick and tilemaking were carried on throughout the year. Some blasting and engine driving was also done for the M.W.S.

No. 11 company was at Head-Quarters till 19th May, when it moved to Ootacamund for work on the Coonoor-Ootacamund railway, working chiefly on bridges, with 20' reinforced concrete spans, the piers were of masonry supported on concrete wells sunk to depths varying from 20' to 40' below the flood level of the lake, and filled with sand and ballast; culverts were also constructed with reinforced concrete.

No. 12 company moved from Bangalore to Ootacamund with No. 11 company, and was principally engaged on a cutting which was filled in with a reinforced concrete tunnel. 1907.

No. 13 company was at Head-Quarters with the exception of about a month, when 100 men were employed at Mudvadi Tank near Kolar in May and June, to carry out some work on the waste weir for the Mysore P.W.D., to prevent scouring. Wooden palissades were run across the weir anchored down with wire at 100' intervals, the stakes being driven 10' into the mud in places.

No. 14 company was at Head-Quarters throughout the year.

At the commencement of the year, Lieut. C. W. Bushell and 25 men of No. 15 company were on the Chinese frontier erecting boundary pillars, the remainder of the company being at Kyauktalon, preparing for a camp of exercise of the Mandalay Brigade, the work consisted of:—a landing stage and approaches, some miles of roads, well sinking, pumping and storing arrangements, telephone lines, survey of manœuvre area and reproduction by ferrotype, redoubt, minefields, flares, etc. The company returned to Mandalay on 31st of January, and was again specially mentioned in Brigade Orders for good work on manœuvres, the company left again on 6th February, for Manpuri near Lashio, to work on the Burma Mining Railway, and Smelting Company's Light Railway. The company returned by rail, reaching Mandalay on 1st June. By 23rd March, Lieut. C. W. Bushell had completed 62 boundary pillars, and he reached Hsipaw on the railway on 1st March, after marching over 1000 miles since leaving Lashio; for this work the detachment received the thanks of the Government of India (Burma Government No. 890, I.B. of 19-9-07). At Mandalay, one section of a gallery range was made of reinforced concrete with an experimental pattern target frame.

Musketry.—British officers were allowed to draw 60 rounds of pistol in lieu of rifle ammunition, instead of the 24 rounds previously sanctioned (I.A.O. 203, of 1907).

At the S.I.R.A. Meeting the following successes were scored:—

A team of three British officers won the Pudukottai Cup.

Company teams were 1st, 2nd, and 3rd, in the Skirmishing Competition.

Owing to their being employed on railway contract work, neither No. 11 or No. 12 company carried out the annual course.

Miniature ranges were built at Secunderabad and Rawal Pindi, and at Mandalay one section of a gallery range was completed.

The classification for the Corps for 1907-08 was 24 marksmen, 582 1st class, 217 2nd class, and 59 3rd class; the large number of the two latter classes being due to the lowering of the qualifying points.

The figure of merit was 61.3.

Reserve.—The following rules for the training of reservists were laid down by I.A.O. 474 of 1907:—

Reservists employed in the Telegraph Department will be trained when considered desirable. All other will undergo two months training at the H.Q. of the Corps biennially.

The strength of the reserve at the end of the year was 285, the 19 vacancies being kept for telegraph reservists.

Instruction.—During the course of Field Works carried out by No. 9 company in the Murree Hills, a suspension bridge of 360' span to take 60 men at 6' intervals, was erected in 12 hours.

Owing to the companies being on railway contract work, neither No. 11 or No. 12 company carried out any field works course during the year.

1907. A detachment of No. 15 company was trained in air line construction, and in the use of the cavalry telephone, and 4 of these instruments with 8 miles of light wire were bought for the company. The telegraph sections of "C" company had a considerable amount of field practice during the year with manœuvres, brigade training, staff ride, and R.A. Camp. Two more cavalry telephones and some D. 14 field cable were purchased.

The instructional equipment of pontoons and wagons was completed in the course of the year.

The "Fireless Cooker" was improved, and was again under trial with troops.

The Japanese type of Water Boiler was still in the experimental stage.

The number of artificers in the Corps rose from 44 to 72 in the year; they had nearly all been trained in the shops, as few men with sufficient trade skill came up for enlistment. The number of trained soldiers without a trade was 17 at the end of the year.

Eight men were sent to the Mysore Government workshops for a further course of instruction in moulding and casting during the year.

Lines.—Since the question of a possible change of Lines for the H.Q. of the Corps was raised in 1904, no work was carried out on the old lines at Bangalore except the most necessary repairs, and the general condition of the lines had suffered accordingly. No further work could be undertaken on the company lines at Mandalay, although only a part had been rebuilt, for want of funds. The new lines at Rawal Pindi were pushed on during the months that the company was in Pindi, and the following were completed—1 bachelors' block; 1 block, of followers' quarters; 1 cook house.

Assault-at-Arms.—At Bangalore the following successes were obtained:—

Order of Merit,	1st and 2nd.
Escalading Race	1st.
Tent pitching, striking, and loading,	2nd.

Pensions.—From 15th June the old pensions after 21 and 32 years' service were abolished, and rules for pensions after 15 and 18 years introduced, with special pensions for Indian Officers and N.C.O.s of longer service. These rules were a great improvement, as it had been found that there were comparatively few men who were fit for the hard work and hardships of a campaign after about 18 years' service, but under the old rules those who were manifestly unfit had to be retained until they had qualified for a pension.

Clothing.—Under I.A.O. 145 of 1907, it was laid down that in future the full dress frocks for havildars would be of the same material as that worn by the lower ranks.

Under I.A.O. 196 of 1907 all metal badges on helmets or paggris were forbidden in F.S. order.

1908. **Officers.**—Subadar-Major Chinnasami, Bahadur, was promoted to the 1st class of the Order of British India, with the title of Sardar Bahadur, from 14th January, 1908.

R.E. N.C.O.s—I.A.O. 70 of 1908 sanctioned the issue of Engineer Pay to B.N.C.O.s under the following circumstances, provided that they were not in receipt of Service Pay;—

- (a) When in hospital or sick in quarters, unless the sickness is the result of indulgence.
- (b) When on board ship, except when proceeding on or returning from furlough.
- (c) When absent on leave, but not on furlough.

Under letter No. 2931 A of 25-5-08 from the D.G. of M.W. one

appointment in the Upper Subordinate Establishment of the M.W.S. 1908. will be offered to each Corps of Sappers each year; and in case of there being no applicants from any one Corps, the appointment to be offered to one of the other Corps.

Employment.—Three sections of No. 9 company left Rawal Pindi on 11th February by rail to take part in the **Operations in the Zakka Khal country**, as part of the Divisional Troops of the force under Major-General Sir J. Wilcocks, K.C.M.G., C.B., D.S.O.; they reached Peshawar that night, and next morning moved up to the camp of the 1st brigade, where transport and ammunition were taken over. On 13th the company marched to Jamrud with the 1st brigade, and was employed on entrenching, water supply, and roadwork, after arrival in camp there. Ali Masjid was reached on 14th and Chora on 15th; on this day the sections were employed in improving the road beyond the kotal to enable the transport to pass, and on reaching bivouac at 5 p.m. carried out various camp works. On 16th work was carried out on the entrenchments of the bivouac and on roads, and on 17th they moved to Walai, two towers and a village were destroyed en route; that afternoon and the next day road work and camp defences were carried out. On 19th the company moved to China, and helped to demolish the village till 1-30 p.m. when the retirement commenced. On 20th the company took part in the operations towards the Sisobi Pass, and carried out demolitions, and burning houses. On 21st one section went with the 1st brigade to Halwai, and was employed in demolition, whilst the other two sections remained at Walai employed on roads and water supply. On 23rd the company went with the 3rd expedition to China, and the demolition was completed by 1-45 p.m., when the retirement commenced (2 Sappers and a Bhisti were injured during this work). Six men joined on 24th, and on that day and the 25th, work was carried out at Walai camp. On 26th the company acted as escort to a convoy to Chora, and moved on to Ali Masjid on 27th, on both these days and up to the 29th when the last troops marched in from Chora, work was carried on on the road between Walai, and Ali Masjid. Peshawar was reached on the 2nd March, and the company marched from there to Rawal Pindi arriving on 13th. The officers with the company were Captain C. M. Wagstaff, and Lieut. T. P. Bassett, whilst Lieuts. E. P. Le Breton, and J. A. McQueen were attached.

Whilst at Rawal Pindi the company was employed on building the lines and workshops, and during the Jhelum and Sialkote brigade manœuvres, constructed and worked a flying brigade of boats to convey all arms over the Chenab river at a point where it was 700' wide. Lieut. Bassett with 5 N.C.O.s and men held explosives classes at Bannu and Dera Ismail Khan, whilst details of all units in the 2nd division were put through a course in the use of field telephones.

The section in Chitral was employed on the following work:—repairs to bridges, intrenchments, roads, brickmaking, and building, etc.

No. 10 company was at Secunderabad throughout the year; they built a store and a photo school, the latter being provided with a complete half plate outfit from the detachment funds.

During the Hyderabad floods at the end of September, the company was employed in repairing the bund of the Jitmatla Tank for two days, it shewed serious signs of failure and its bursting would have greatly augmented the disaster. At the same time a detachment was employed in the subaqueous demolition of some sluices of a masonry bund in the bed of the Musi River; these had jammed under the pressure of the flood, and could not be opened to release the water; they were blown up with guncotton.

1908. The following D.O. letter was received from the G.O.C. Secunderabad by the Commandant:—

"I am publishing a station order conveying the Resident's commendation of the good work performed by the troops who took part in fighting the recent flood. The Resident desires particularly to thank Major McClintock and the Sappers and Miners for the share he and his men contributed in the above work. I am sure you will agree with me that very great praise is due to Major McClintock and his men, for the way they put their backs into their work, and I hope when conveying the Resident's remarks to him, you will kindly let him know how highly we appreciate the work of his company from the military point of view."

Nos. 11 and 12 companies returned from Ootacamund at the beginning of April, on completion of the contract work on the railway.

Nos. 13 and 14 companies were at H.Q. throughout the year.

No. 15 company was at Mandalay throughout the year except for manœuvres and field training; a mule tonga and a sailing punt were built, also a 20' elliptical skew ferro-concrete arch.

When moving out for field training, 2 streams 100 yards wide, and 2 channels of the Irrawady, 250 and 600 yards wide, were crossed by rafts of light pontoons carried on mules, worked with a 1" steel rope.

A new miniature range was constructed.

The following are extracts from letters received from the D.G. of M.W. in February and November after his inspections of the Corps at H.Q. :—

"Colonel Bond considers that the high reputation the Corps has always held has been again fully maintained, and that distinct progress is apparent in many ways, since he was last in Bangalore, and saw the "Queen's Own".

The D.G. of M.W. desires to express his entire satisfaction with all he saw of the technical work of the Corps at his inspection."

Musketry.—Under I.A.O. 366 of 1908, 67 rounds of short range ammunition per man was sanctioned in lieu of a similar number of rounds of blank ammunition.

The classification of the Corps for the year 1908-09 was:—

Marksman 79, 1st class 1024, 2nd class 73, 3rd class nil, and the percentage 67%. This was a great improvement over the previous year, due to a great extent to the raising of qualifying points, and the increase of ammunition under I.A.O. 423 of 1908.

In the R.E. Rifle Association, the Corps again won the Challenge Shield, No. 12 company being 1st, and No. 10 company 2nd for it, whilst Nos. 10 and 12 companies were respectively 1st and 2nd for the Rapid Fire Cup.

In the S.I.R.A. Meeting Havildar Joseph won the Native Championship. And the following were the team results.

Cubbon Cup, 2nd

Championship Trophy, 3rd

Wolfe-Murray Competition, at disappearing targets in unknown positions, 1st.

Night firing 1st, 3rd, 4th, and 5th

Fire problem at—entrenched position	}	1st, 2nd, 3rd, and 7th.
retiring cavalry		
advancing cavalry		

Fire problem at—hostile scouts	}	3rd, 4th, and 6th.
pursuing enemy		
hostile patrol advancing		

Fire problem at—hostile post entrenched
 enemy advancing through defile } 1st. and 2nd
 hostile patrol advancing }

Equipment.—During the year all service companies replaced the old pattern leather pakhsals with metal ones.

The method of packing and carrying wet guncotton was finally settled, the guncotton to be in 48 copper cases each containing 3 slabs of $1\frac{1}{2}$ lbs., and these to be carried in 4 cane boxes, but the new method had not been taken into use by the end of the year.

Experiments were carried out with an improved mule saddle, which was slightly lighter than the saddle in use.

A lighter pattern of equipment bag for service companies was also designed, to replace the leather pattern as worn out; the new pattern was also an improvement as to rapidity in getting out the contents of the bag.

Instruction, Workshops, and Trades.—The Burman officers, and most of the N.C.O.s of No. 15 company were practised during September and October in Engineer Reconnaissance, to report on bridges, repairs needed for roads, etc.

The workshops of the company at Rawal Pindi were completed.

Three engine drivers and a sawyer were sent by No. 9 company to the Pindi Arsenal for instruction.

The Corps Workshops and the Instructional Workshops were separated, but the following trades remained in charge of the S. of I. till 1st August 1909, when the S. of I. was relieved of all but Instructional work:—bricklayers, brick and tile makers, stonecutters, moulders, fitters, and turners.

Under orders from the G.O.C. 9th Division, the class for officers and men of Pioneer Regiments was extended, so as to include officers and men from all the Indian Cavalry and Infantry regiments in the Division; this entailed a great increase of work on the Instructional Staff, owing to the size of the class. For the Cavalry and Infantry the railway work is omitted, but otherwise they do the same course as the Pioneers.

A field engineering Museum was made on a piece of Government land below the bund of the Ulsur Tank at Bangalore; an old building there was placed in a state of defence, and various field engineering works were executed, some full size, and some in model; bad examples of field engineering were also shewn, with a descriptive plate shewing what was wrong with them; the idea being that such a museum would be useful to other units, for brief practical lectures on field engineering before the men proceeded to carry out their actual field training.

The following is a copy of the report by the Inspector of Gymnasia in India on the Physical Training of the Corps, after his inspection in October 1908:—

“I have little to add to my report on last year's inspection, but to record further improvement; great interest is taken by all ranks in Physical Training, and the result is a high state of physical efficiency. The men are quick, active, and fit, and the physique is of a good type. The excellent obstacle course in itself affords a most valuable training. It is one of the best I have seen.”

Lines.—The lines of the company at Rawal Pindi were completed.

Assault-at-Arms.—The following successes were scored at the Assault-at-Arms held at Bangalore:—

1908.	Cross country race for teams,	1st
	Escalading race,	2nd
	Tent pitching,	2nd
	Gymnastics, non-instructors,	2nd

and in the Secunderabad Meeting, No. 10 company won the escalading race against six Infantry regimental teams, whilst they were 2nd in the tent pitching and bayonet fighting.

1903-10. **Officers.**—Colonel Anderson quitted the Corps on 20-6-09 after holding the command for over 4 years; and he was succeeded by Lt.-Col. C. H. Roe, who rejoined on the 21st June, after an absence from the Corps of a little over 5 years.

Major C. H. Heycock left the Corps from 31st July 1909, on completing 5 years as Superintendent of Park, and he was replaced by Major H. J. M. Marshall, who joined from the M.W.S. after an absence from the Corps of a little over 3½ years.

Captain C. M. Wagstaff joined the Staff College, Quetta, in February 1909.

Captain E. K. Molesworth quitted the Corps on 2nd November 1909, on completing an extended tenure of the appointment as Adjutant, and he was replaced by Lieut. R. Hamilton, who joined from the M.W.S. on the 28th November.

Lieut. C. W. Bushell, was appointed Officiating Adjutant from 4th November 1909.

The Honorary rank of Captain was conferred on Subadar-Major Chinnasami, Sardar Bahadur, on his retirement on 8-2-1909.

Captain F. D. Irvine, proceeded on 8-2-10 to join the Staff College, Quetta, having been granted a nomination.

Captains C. J. Clarke, G. J. W. Smyth, and W. R. Izat, joining on 4-1-10, for a four months' course of instruction in military duties after completing the Chatham Course.

Lieut. A. E. J. Collins joined the Corps on 23-3-10, and was posted as company officer of "C" company, as an officer was due to be sent shortly on the course of Telegraph Instruction.

Subadar Alexander received the 2nd class of the Order of British India, with the title of Bahadur, from 23-12-08. (Gazette of India dated 1-1-1910.)

Organisation.—In January 1909, orders were received that no more Recruit or Pension Boys were to be enlisted; those already on the establishment to continue to the age of 18 years, unless enlisted, or discharged as unfit, earlier. (From A.G. India under No. R. 402 dated 22-1-1909 from the A.A.G. 9th Division).

Sapper Drivers were authorised for the 6th Service Company from 1-4-1909, under G. of I. No. 271 B, dated 26-1-09, to the A.G. in India.

The personnel of the Indian Submarine Mining Section at Rangoon was affiliated to the Corps from 1-1-1910, under letter No. 25 A, dated 14-1-1910 from the Secretary to the G. of I., Army Department to the A.G. in India.

Recruiting.—224 men were examined at Corps Head-Quarters between 1-4-09 and 31-3-10, and of these 78 were enlisted as Sappers or Buglers, and 26 as Drivers.

Sappers—Parayers	...	...	21
Christians	...	...	16
Muhammedans	...	...	7
Tamil Castes	...	...	7
Telegu Castes	...	...	15
Other Tamil and Telegu speaking men	...	...	10
Nair	...	...	1
Canarese	...	...	1

Drivers—Muhammedans	...	...	18
Parayers	...	...	8

1909-10.

Reserve.—244 Reservists came up for training in February 1909 ; they were divided into three companies, and put through the following course :—

	Days.
Camp pitching, etc....	1
Preliminary Drills, Musketry	4
Musketry Course	10
Knotting, Lashing, and Use of Spars	3
Bridging, Trestle	3
„ Lock	2
„ Cantilever	3
Bamboo bridges, Barrel Piers, and Pile Driving	3
Gun pits, and Epaulments	2
Redoubt	5
Explosives, and Obstacles	3
Miscellaneous	1
Field Training in camp	5
Total working days	45

One hour's drill was carried out daily except when on Musketry.

Each day when on Field Works, one section was employed at Sapping, Mining, and Cutting and Lighting Fuzes.

At the end of the year 09-10, the strength of the Reserve was 293, the deficiency of 11 being in Telegraph Reservists.

On 16th March 1910, orders were received that no transfers to the Reserve should be made till further orders, except to fill up casualties in the then actual strength. (A.G. India, No. 56 E. of 15-3-10).

Designation of Companies.—Under letter No. 78 B, dated 22-7-09, from the A.G. in India, the title “Service Company” was changed to “Field Company”.

Employment.—No. 9 company was at Rawal Pindi until 29th December when they moved to return to Corps Head-Quarters; one section was in Chitral until October, when it was relieved by a section of No. 11 company. Detachments were sent to Dera Ismail Khan, Bannu, and Abbottabad, to carry out instructional courses in field works and use of explosives for other units, and courses in telephone work were held at Rawal Pindi. A telephone system was put up at Murree by a detachment in May. A section was employed in June and July at Gharial, in the Murree Hills, to level a new polo ground. Moving with the Chitral Reliefs, three sections were employed in dismantling and reconstructing with new piers, anchorages, and cables, the Panjkora Suspension Bridge, reaching Pindi again on 11-11-09. During April, May and June, the section in Chitral was employed on repairs to the Mastuj Suspension Bridge, and re-aligning a part of the road near it. This section also constructed a water course from the Drosh nala to the fort. The company left Rawal Pindi on the 29th December, and reached Karachi on the 31st December, and Bangalore on 10th and 11th January.

No. 10 company was at Bangalore throughout the year.

No. 11 company was at Bangalore till 15-11-09, when it moved to Rawal Pindi via Madras and Karachi, one section having proceeded to Chitral in September, arriving at Drosh on the 5th October.

Nos. 12, 13, and 14 companies were at Bangalore throughout the year.

No. 15 company completed a new 6' path at a grade of 1/10 to the top of Mandalay Hill in February 1909. On the 13th March, 30 men moved to Maymyo to build a new Brigade Office there, as well as

1909-10. Clerks' quarters. On the 18th March, Lieut. Harris and the right half company proceeded to the Upper Chindwin for bridge building.

A detachment moved to Zebingyee, on the Mandalay-Maymyo line, and carried out water works there. Near Mandalay, various repairs to bridges were carried out for the D.C. Mandalay, and $4\frac{1}{2}$ miles of the Mandalay-Maddya light railway were laid.

Arms.—"D" company received the short rifle on 5-11-09, thus leaving No. 15 company only, still armed with the long rifle.

Equipment.—Under letter No. 646 D, of 23-6-1909, from the A.G. in India, Field Companies were permitted to retain two mobilization binoculars or monoculars in regimental charge in peace time, a most useful concession both for musketry and field training.

The maintenance of 2nd line saddles by Field Companies, was abolished under A.G.'s letter No. 30 B, of 28-10-09.

Steps were taken to provide Field Companies with silencing gear for the 1st line equipment.

The company metal pakhsals were altered to the "Stuart" pattern which prevented their being knocked over, and the water upset, when they were on the ground.

Eight cutters wire Mark IV. were added to the equipment of a Field Company in April (Secretary to G. of I. Army Department No. 553 D, of 3-3-10 to A.G. in India).

Inspections.—After his inspection of Corps H.Q. in January 1910, the Director-General of Military Works wrote that:—

"At his inspection both at Head-Quarters, and in seeing the Burma company at Mandalay, he noticed that the high standard the Corps had always worked up to was well maintained, and that the spirit of the Corps was never better."

Musketry.—The classification of the Corps for the year 1909-10 was:—

Marksmen	36	Average number of rounds fired per man was
1st Class	1043	123.5
2nd Class	136	
3rd Class	3	
Percentage	67.5	The percentage shewed a slight improvement over 1908-09, although the classification was rather poorer.

In the R.E. Rifle Association the Corps won the following events: Championship of the Corps and Gold Medal.

Match vi., Abroad—Silver Challenge Shield and 8 Bronze Medals.

Class i., Abroad—Match 2.

Class ii., Abroad—Aggregate with Silver Medal.

Class iii., Abroad—Aggregate, with Silver Medal.

Range Practices, Match i., and Match iii.

Class iv., Abroad—Aggregate.

Range Practices 300 yards, and 500 yards.

besides 79 other minor prizes.

In the S.I. Rifle Association Meeting the Corps results were:—

B.A. limited entries, 600 yards, 2nd, with a score of a possible, out of 205 competitors.

Disappearing target,	100 yards	2nd out of 38
Revolver, snapshooting,	20 "	1st out of 16
Revolver, rapid firing,	20 "	2nd out of 23
Revolver, aggregate		2nd out of 39

and 13 minor prizes.

Lal Bagh Cup (2 B.O.s and 1 I.O.)

2nd out of 8 teams

I.A. limited entries 900 yards

2nd out of 300

I.A. Field Practices, limited entries, 300 yards	1st out of 216	
"	500 "	2nd out of 180
"	500 to 200 yards	1st and 2nd out of 390
"	500 yards	2nd out of 393
Mysore Durbar Stakes, 900 yards	1st	out of 390
Nursery Stakes 200 and 600 yards	2nd	out of 129
Dewan's Prize	No. 12 company	1st out of 19 teams.
Ghazi Stakes, 200 yards	1st and 2nd	out of 34
and 68 minor prizes.		

1909-10

Under A.G. India No. 1 G, of March 1910, the number of repetitions allowed in range practices in the annual course was restricted to two; any man failing to obtain the qualifying points after three shoots at a distance, to be classified as a 3rd Class shot.

Instruction, Workshops, and Trades.—In July, the duties of the S. of I. and S. of P. with regard to men on works, were laid down as follows:—

The S. of I. to superintend all men on Field Works, and on the following classes:—

- | | |
|-------------------------------------|---|
| i. Preliminary Trades Class | All recruits posted to companies, who had not passed in a trade. |
| ii. Special Trades Class | 8 men per company. |
| iii. Probationary Artificers' Class | Balance to make up deficiency in authorised proportion in each company. |
| iv. Survey and Reconnaissance Class | 1 N.C.O. and 1 Sapper, or 2 Sappers per company. |
| v. Field Works' Class | 2 N.C.Os. or Sappers per company. |

whilst the S. of P. should superintend all other trained men on works.

On 31-3-1909, there were 26 trained soldiers without any trade qualification.

By the end of the year the number of artificers had risen to 114, and all of these except one had been trained in the Corps.

In July 1909, the following orders were issued for tactical, etc., training:—

A Corps Exercise to be carried out once a month under the Commandant.

Each company to be at the disposal of the Company Commander on one day a month for such exercises as:—

- Defence of a section of railway.
- Defence of a bridge or defile.
- Camping, and protection of camp.
- Defence of a convoy.
- Defence of a detached post.
- Improvised loopholes, and obstacles.
- Defence of positions.
- Defence of village or wood.

Utilisation of cover in advance and retirement, and covering fire.

The above being more especially Sapper jobs, most time to be spent on them, but occasional practice also to be carried out in the attack of the above, together with Outposts, Reconnaissance, Advanced, Flank, and Rear Guards. One exercise per quarter to be by night.

Mobilisation parade, with a route march of not less than 15 miles, (which should be gradually increased), or entraining of the entire mobilised company.

Company Training from 6 a.m. to 8-30 a.m. every Friday.

Also Physical Training, Running, Map Reading and Engineer Scouting, Semaphore Signalling, and Musketry Instruction for 2nd and 3rd class shots, weekly.

The "Khaki Map" to be used for lectures to I.O.s and N.C.O.s.

1902.

The Recruits to carry out a Route March every Saturday.

The following alterations were made in the course of Field Works laid down in 1903 for Field companies :—

The practice in Shelter Pits to include digging, "Lying down."

In the five days allotted for the "Use of Spars, etc." the heaviest spars available to be used for sheers and derricks.

The annual railway course was extended to 10 days, and the quadrennial 30 days' course abolished.

Two days' Sapping were added, to be carried out by a few men at a time, concurrently with other work.

At least 16 hours' work in the course to be by night—to include laying out entrenchments, digging, and sapping, with no more light than bullseye and tracing lanterns; and bridging with flare lights.

Sapper artificers to carry out the whole course, and Trades' Class men to join for all bridging and railway work.

These alterations increased the length of the course by 4 days.

The trade of Basketmaker was abolished from 1-3-1910.

A Lithographic Press 30" by 45" was purchased and taken into use in February 1910, to enable the Litho School to turn out large maps in one piece; this was especially needed for manœuvre maps. An Improved Bremner Platen Printing Machine, demi folio, was ordered in February 1910.

Lines.—A new equipment store for one Field company was commenced on the parade ground in April 1909, and finished in 1910.

From May 1909, the maintenance of all huts occupied by Sapper Drivers was sanctioned by Government, and the recovery of rent from Drivers was therefore discontinued.

The Ulsur Rock ground was taken over in 1909 from the M.W.S. and the wall round it on the south side was completed.

In October 1909, the rebuilding of K Block in the H.Q. Lines was commenced; the new quarters to have higher walls, better ventilation and light, and a cooking verandah.

At Rawal Pindi various works were carried out in the lines, two sweepers' quarters, and washing places for the men were built, the drainage was improved by the addition of 600' of brick drains; a pukka brick sawpit with a C.I. roof was constructed; the miniature range was reconstructed, and a field works store 50' by 20' was completed, the materials for this store being supplied by the M.W.S.

In Chitral, a cookhouse and followers' quarters were built for the section there, in Lower Drosh.

Pay and Allowances.—Under I.A.O. 16 of 1-1-1909, all Indian officers were in future to receive the pay of the highest grade of their rank; N.C.O.s and sappers to receive an increase of Rs. 2 per mensem to their pay, as well as a daily free issue of 3 lbs. of firewood; and under I.A.O. 97 of 1909, these increments were made applicable to reservists when up for training.

Dress.—A soft felt slouch hat was introduced at the commencement of the year for wear with khaki in No. 15 company.

A new helmet badge, of the same design as that introduced in 1885, but smaller and in bronze, was sanctioned for wear by officers and British N.C.O.s under para. 16 of Despatch No. 21, dated 12-2-1909 from the Secretary of State for India, (A.G.s No. 73 A of 29-3-09), and it was taken into wear in the following October.

The open pattern of Khaki coat, worn with a black tie, was adopted for British officers in November, under I.A.O. 624 of 09.

Corps Professional Library.—The old R.E. Library at Madras was broken up, and a number of books from it were received for the Corps Library in October. By the end of 1909 there were 884 books, and 1449 volumes in the Corps Professional Library.

APPENDIX A.

G.O.C.C. of 8-12-1823 laid down the dress of officers of the Corps of Pioneers as follows:—

Full Dress.—*Coatee*—Dark green cloth, double-breasted, with black cloth lappels, cuffs, and collar, plain loops put on in the manner prescribed for Infantry of the Line, with one or two silver epaulettes according to army rank, cross flaps, and white kerseymere turnbacks.

Cap—Black beaver, bell shape, felt crown $7\frac{1}{2}$ " deep, with lacquered top 11" in diameter, silver lace of 2" broad round the top, and $\frac{1}{2}$ " lace round the bottom, plate in front bearing device, surmounted by a cockade, scales with lion head studs, either to fasten under the chin or to meet at top, leather peak $2\frac{1}{2}$ " broad.

Feather—Green upright hackle, 12" long, with a silver socket.

Breeches—White kerseymere, with Corps buttons and buckles at the knee.

Stockings—White silk. Shoes with plated buckles.

Pantaloon—With Hessian boots.

Sabre—The King's new regulation sabre, and leather scabbard.

Belt—Black leather $1\frac{1}{2}$ " broad, worn round the waist under the coatee.

Cravat—Black silk.

Gloves—White leather.

Dress.—*Trousers*—Loose white linen, with Wellington boots.

All else—As in full dress.

Undress.—*Jacket*—Dark green round shell jacket, black cloth cuff and collar, quite plain, and to be united in front with hooks and eyes, collar 3" deep, cuff slashed.

Cap—The regulation cap covered with oilskin, quite plain.

Every other part of dress, as prescribed for Infantry of the Line.

Great Coat.—Deep blue, with stand up collar, perfectly plain, single breasted with regimental buttons.

APPENDIX B.

Stations of the Head-Quarters of the Corps, 1831 to 1910.

STATION.	FROM		TO		SPECIAL EMPLOYMENT.
Perambore	... July	1831	Aug.	1831	
Trimonchy	... Aug.	"	Feb.	1832	Poonamallee-Vellout road
Bangalore	... Feb.	1832	July	"	
Malay Peninsula	July	"	Aug.	"	Proceeded on Fd. Service, but returned from Penang
Madras	... Aug.	"	Sept.	"	
Bangalore	... Sept.	"	Mar.	1834	
Coorg	... Mar.	1834	April	"	Field Service
Bangalore	... May	"	July	"	
Nilgiris	... Aug.	"	Jan.	1835	Coonoor Ghat works
Coorg	... Feb.	1835	Oct.	1836	
Nilgiris	... Nov.	1836	Sept.	1838	Coonoor Ghat works
Bangalore	... Sept.	1838	Aug.	1839	Chennapatam-Closepet rd.
Kurnool	Aug.	1839	Feb.	1840	Field Service

STATION.	FROM	To	SPECIAL EMPLOYMENT.
China	... April 1840	Jan. 1843	Field Service
Madras	... Jan. 1843	May "	
Bangalore	... June "	Oct. 1845	
Coorg	... Nov. 1845	Aug. 1852	
Burma	... Sept. 1852	Jan. 1854	Field Service
Coorg	... Mar. 1854	Jan. 1855	
Dowlaiswaram	... Mar. 1855	Jan. 1865	Godaveri anicut, & canal works
Bangalore	... Mar. 1865	Date.	

Stations of "A" Company. (Now "C" Company).

Perambore	... July 1831	Aug. 1831	
Trimonchy	... Aug. "	Feb. 1832	Road work
Bangalore	... Mar. 1832	July "	
Malay Peninsula	July "	Aug. "	Field Service, but only reached Penang
Madras	... Aug. "	Sept. "	
Bangalore	... Sept. "	Mar. 1834	
Coorg	... Mar. 1834	April "	Field Service, with Eastern Column, under Brigadier Lindsay
Bangalore	... May "	July "	
Det. at Salem	... July "	April 1838	Detachment employed on Sholagiri Ghat
Nilgiris	... July "	Jan. 1835	Coonoor Ghat.
Coorg	... Feb. 1835	Oct. 1836	Road work.
Nilgiris	... Nov. 1836	April 1840	Coonoor and Segar Ghats
Bangalore	... 1838		
China	... April 1840	Jan. 1843	Field Service
Madras	... Jan. 1843	May "	Work under Q.M.G.
Bellary	... Aug. "	Dec. "	Erection of barracks, etc.
	Dec. "	Feb. 1847	Detachment remained at Bellary
Jubbulpore	... Dec. "	Feb. 1844	Field Service
Kampti	... Feb. 1844	Jan. 1845	Road work
Berhampore and Ganjam	... Mar. 1845	June 1846	
Coorg	... June 1846	Feb. 1847	With H.Q. of Corps
Aden	... Feb. 1847	Feb. 1850	Work on fortifications
Mercara	... Feb. 1850	Feb. 1852	
Burma	... Feb. 1852	Jan. 1856	Field Service
Dowlaiswaram	... Feb. 1856	Dec. "	
Kimedi	... Dec. "	Aug. 1857	Road work
Dowlaiswaram	... Aug. 1857	Feb. 1860	
China	... Mar. 1860	Dec. "	Field Service
Dowlaiswaram	... Dec. 1861	Nov. 1862	
Secunderabad	... Dec. 1862	Feb. 1864	
Bellary	... Mar. 1864	Feb. 1868	Work under P.W.D.
Bangalore	... Feb. 1868	Feb. 1869	
Rangoon	... Feb. 1869	Mar. 1872	Pagoda defences, etc.
Bangalore	... April 1872	May 1877	Water supply works
Secunderabad	... May 1877	Dec. 1878	
Bombay	... Dec. 1878	July 1879	Submarine Mining Instrn.
Bangalore	... July 1879	Oct. "	

STATION.	FROM	TO	SPECIAL EMPLOYMENT.
Afghanistan	... Nov. 1879	Oct. 1880	Field Service
Bangalore	... Oct. 1880	Aug. 1882	
Egypt	... Aug. 1882	Oct. "	Field Service
Bangalore	... Oct. "	Dec. 1885	

On reorganisation of the Corps on 16-12-1885, it became "A" Special Depot Company, with its Head-Quarters permanently at the Head-Quarters of the Corps.

The following are the stations at which Sections have since been employed :—

Rangoon	... 1885	1891	Submarine Mining; this detachment was abolished in 1891
Burma	... Nov. 1885	1886	Telegraph, F. S.
Hazara	... Feb. 1891	May 1891	Telegraph, F. S.
Malakand and Buner	... July 1897	1898	Telegraph, F. S.
Tirah	... Aug. "	April 1898	Pr. P.-L. on F. S.
China	... Aug. 1900	Aug. 1901	Tel. Pr. and P.-L. on F. S.
Somaliland	... Aug. 1903	July 1904	Printing, F. S.

Under I.A.O. dated Simla, 7-12-1903, it became "C" Company.

Stations of "B" Company. (Now No. 10 Company).

Nizam's Dominions	July 1831	May 1832	Hyderabad-Masulipatam rd.
Bangalore	... Dec. 1832	Mar. 1834	
Coorg	... Mar. 1834	April "	Field Ser. with Northern Column, under Lieut.-Col. Waugh
Coorg	... April "	June "	Mercara-Manjarabad rd.
Nilgiris	... June "	Dec. 1836	Coonoor, Kotagiri, and Segar Ghats
Pamban	... Dec. 1836	Feb. 1838	Constructing Pamban Channel
Det. at Salem	... June 1834	April "	Sholagiri Ghat and other roads
Ramnad	... Feb. 1838	Mar. "	

On reduction of the Corps to six companies, under G.O.G. dated 26-12-1837, "B" company was broken up, and reformed from "G" and "H" Companies in March 1838.

Masulipatam	... Mar. 1838	Jan. 1840	
Det. at Poona-mallee	... April "	Sept. 1838	Repairing Great Western road
China	... Feb. 1840	Jan. 1843	Field Service
Madras	... Jan. 1843	June "	Work under the Q.M.G.
Bangalore	... June "	Aug. 1844	
Virarajendrapet	... Oct. 1844	Sept. 1845	Tracing and making road, Periambadi Ghat
Bangalore	... Oct. 1845	April 1846	
Dowlashwaram	... Sept. 1846	Jan. 1850	Godaveri anicut
Aden	... Jan. 1850	April 1852	Aden fortifications
Coorg	... April 1852	Sept. "	
Burma	... Sept. "	Jan. 1856	Field Service, and Arakan-Pegu road

STATION.	FROM	TO	SPECIAL EMPLOYMENT.
Dowlaishwaram ...	Jan. 1856	Jan. 1857	
Persia ...	Jan. 1857	June. "	Field Service
Central India ...	June "	July 1858	Field Service
Dowlaishwaram ...	Sept. 1858	Oct. 1859	
Wellington ...	Nov. 1859	Mar. 1863	Road etc., work
Port Blair ...	May 1863	Mar. 1865	Building barracks etc.
Bangalore ...	Mar. 1865	Dec. 1866	
Coonoor ...	Dec. 1866	Feb. 1867	Ghat work
Mercara ...	Mar. 1867	June "	Road work
Bangalore ...	June "	Oct. "	
Lakadi, Wynaad...	Nov. "	May 1869	Tambercheri Ghat
Bangalore ...	May 1869	Feb. 1872	
Rangoon ...	Feb. 1872	Feb. 1875	Pagoda defences
Bangalore ...	Feb. 1875	Dec. 1876	
Nellore ...	Dec. 1876	Dec. 1877	Famine relief works, East Coast canal
Bangalore ...	Jan. 1878	Dec. 1878	
Afghanistan ...	Dec. "	June 1879	Field Service
Bangalore ...	July 1879	Jan. 1882	Mysore State Railway from March to July 1881
Secunderabad ...	Feb. 1882	Oct. 1885	
Suakin ...	Nov. 1885	May 1886	Field Service

On reorganisation of the Corps on 16-12-1885, it became 2nd Company

Bangalore ...	May 1886	Mar. 1887	
Burma ...	Mar. 1887	Mar. 1890	Field Service
Bangalore ...	April 1890	Sept. 1892	
Secunderabad ...	Sept. 1892	Nov. 1895	
Bangalore ...	Jan. 1896	Oct. 1896	
Thayetmyo ...	Oct. "	Dec. "	
Mandalay-Kunlon			
Railway ...	Dec. "	June 1897	
Maymyo ...	June 1897	Dec. "	
Mandalay-Kunlon			
Railway ...	Dec. "	June 1898	
Thayetmyo ...	June 1898	Nov. 1899	
Bangalore ...	Nov. 1899	Jan. 1901	
Nandidroog ...	Jan. 1901	Mar. "	
Khar ...	Mar. "	April 1902	
Chakdara ...	April 1902	July "	
Malakand ...	July "	Oct. "	
Delhi camp and			
manœuvres ...	Nov. 1902	Jan. 1903	
Bangalore ...	Jan. 1903	Jan. 1905	

Became No. 10 company under I.A.O. dated Simla 7-12-1903

Camp Morappur...	Jan. 1905	Mar. 1905	Platelaying
Bangalore ...	Mar. "	Oct. 1906	
Secunderabad ...	Oct. 1906	Date	

Stations of "C" Company. (Now No. 11 Company).

Perambore ...	July 1831	Aug. 1831	
Trimonchy ...	Aug. "	Dec. "	Poonamallee-Vellout road
Malacca ...	Dec. "	April 1833	Field Service

STATION.	FROM	TO	SPECIAL EMPLOYMENT.
Madras	... April 1833	Nov. 1833	
Nilgiris	... Nov. "	Mar. 1834	Coonoor Ghat
Coorg	... Mar. 1834	June "	Field Service, with the Western Column under Col. Foulis
Nilgiris	... June "	Dec. "	Coonoor Ghat
Coorg	... Jan. 1835	Nov. 1838	Mercara-Fraserpet road, & Mercara-Mangalore road <i>via</i> Sampagi Ghat
Bangalore	... Feb. 1838	Nov. "	Det. employed on fort & roads
Belgaum	... Nov. "	Dec. 1840	Building barracks, & Belgaum-Vingorla road
Scinde and Afghanistan	... Dec. 1840	May 1844	Field Service
Bangalore	... May 1844	Oct. 1845	
Coorg	... Nov. 1845	Oct. 1847	
Periambadi	... Oct. 1847	May 1848	Ghat works
Aden	... Sept. 1848	Dec. 1851	Aden fortifications
Coorg	... Dec. 1851	Aug. 1852	
Burma	... Sept. 1852	Jan. 1856	Field Service
Dowlaiswaram	... Jan. 1856	Aug. 1857	
Bengal	... Aug. 1857	April 1860	Field Service
Madras	... April 1860	Aug. "	
Northern Circars	... Aug. "	Jan. 1863	Various works at Waltair Jeypore, etc.
Bangalore	... Feb. 1863	April 1866	
Port Blair	... April 1866	Mar. 1867	Convict barracks, etc.
Bangalore	... Mar. 1867	Mar. 1868	
Bellary	... Mar. 1868	Nov. 1870	Work under P.W.D.
Bangalore	... Nov. 1870	Jan. 1875	
Rangoon	... Jan. 1875	Nov. "	Pagoda defences, etc.
Malay Field Force	... Dec. "	Mar. 1876	Field Service
Bangalore	... April 1876	Oct. 1877	
Madras	... Oct. 1877	Feb. 1878	Famine relief works
Bangalore	... Feb. 1878	April 1879	
Afghanistan	... Dec. 1879	Oct. 1880	Field Service
Bangalore	... Oct. 1880	Dec. 1881	
Nagpur	... Dec. 1881	Oct. 1885	Rebuilding Seetabuldee fort
Burma	... Nov. 1885	Mar. 1887	Field Service
On reorganisation of the Corps on 16-12-1885, it became 3rd Company.			
Bangalore	... Mar. 1887	Sept. 1889	
Secunderabad	... Sept. 1889	Sept. 1892	
Nichuguard-Manipur road	... Oct. 1892	Mar. 1893	Road work
Bangalore	... April 1893	Oct. "	
Chin Hills	... Nov. "	Mar. 1894	
Myingyan	... April 1894	Nov. "	
Chin Hills	... Nov. "	April 1895	
Thayetmyo	... May 1895	Oct. "	
Chin Hills	... Nov. "	May 1896	
Thayetmyo	... May 1896	Oct. "	
Bangalore	... Nov. "	July 1900	
Pekin	... Aug. 1900	Nov. "	Field Service

STATION.	FROM	TO	SPECIAL EMPLOYMENT.
Shanghai	... Nov. 1900	April 1901	
Weiheiwei	... April 1901	June "	
Secunderabad	... June "	Nov. 1903	
Became No. 11 Company under I.A.O. dated Simla 7-12-1903.			
Bangalore	... Nov. 1903	May 1907	
Ootacamund	... May 1907	April 1908	
Bangalore	... April 1908	Nov. 1909	
Rawal Pindi	... Nov. 1909	Date	Detachment in Chitral Oct. 1909 to date.

Stations of "D" Company. (Now No. 12 Company).

Moulmein	... July 1831	Nov. 1832	
Madras	... Nov. 1832	Feb. 1834	
Kimedi	... Feb. 1834	April 1835	Field Service
Madras	... July 1835	Aug. 1840	Quarrying rock for break-water; Red Hills water supply; and Reclamation.
Nilgiris	... Aug. 1840	Feb. 1843	Ghat works
Bangalore	... Feb. 1843	April 1844	
Aden	... April 1844	April 1847	Defence work
Coorg	... April 1847	Nov. 1849	
Dowlaiswaram	... Dec. 1849	April 1852	Godaveri anicut
Bezawada	... April 1852	Jan. 1855	Kistna anicut
Dowlaiswaram	... Jan. 1855	Dec. "	
Rangoon	... Dec. "	Oct. 1859	
Madras	... Nov. 1859	Jan. 1861	Repairs to Fort St. George
Bangalore	... Feb. 1861	Mar. 1862	
Lakadi, Wynaad	... Mar. 1862	Mar. 1866	Tambercheri Ghat
Bangalore	... Mar. 1866	Mar. 1867	
Port Blair	... Mar. 1867	May 1868	Convict barracks
Secunderabad	... Mar. 1868	Dec. 1872	Trimulgherry barracks
Bangalore	... Jan. 1873	Nov. 1875	
Rangoon	... Dec. 1875	Feb. 1879	Pagoda defences
Bangalore	... Mar. 1879	July "	
Rumpa District	... Jan. "	Dec. 1880	Suppression of disturbances etc.
Bangalore	... Jan. 1881	Jan. 1883	
Ootacamund	... Jan. 1883	April 1885	
Bangalore	... April 1885	Oct. "	
Burma	... Nov. "	Mar. 1887	Field Service
On reorganization of the Corps on 16-12-1885, it became 4th Company.			
Bangalore	... Mar. 1887	Oct. 1891	
Dipupani, Assam	... Nov. 1891	Mar. 1892	
Bangalore	... April 1892	Oct. "	
Chin Hills	... Nov. "	April 1894	Det. on F.S. in 1893
Thayetmyo	... April 1894	Oct. "	
Bangalore	... Nov. "	Aug. 1897	
Tirah Expedition	Aug. 1897	April 1898	Field Service
Malakand	... April 1898	July "	
Khar	... July "	Mar. 1899	
Secunderabad	... April 1899	Dec. "	
Bangalore	... Dec. "	Mar. 1903	
Sikkim and			
Thibet Expn.	... Mar. 1903	Sept. 1904	
Became No. 12 Company under I.A.O. dated Simla 7-12-1903.			

STATION.	FROM	TO	SPECIAL EMPLOYMENT.
Bangalore	... Oct. 1904	May 1907	
Ootacamund	... May 1907	April 1908	
Bangalore	... April 1908	Date	

Stations of the "E" Company. (Now No. 13 Company).

Perambore	... July 1831	Aug. 1831	
Trimonchy	... Aug. "	Feb. 1832	Poonamallee-Vellout road
Bangalore	... Mar. 1832	Nov. 1833	Repairing the fort
Nilgiris	... Nov. 1833	Mar. 1834	Coonoor Ghat
Coorg	... Mar. 1834	June "	Field Service with the Western Column under Col. Foulis.
Nilgiris	... June "	Dec. "	Coonoor Ghat
Coorg	... Jan. 1835	Sept. 1838	Mercara-Fraserpet road, and Mercara-Mangalore road <i>via</i> Sampagi Ghat.
Bangalore	Sept. 1838	Nov. 1839	
Berhampore and Ganjam	... Dec. 1839	Mar. 1845	Constructing and repairing roads.
Bangalore	... April 1845	Oct. "	
Aden	... Nov. "	Nov. 1848	Defence work
Coorg	... Dec. 1848	Feb. 1852	
Burma	... Feb. 1852	Mar. 1856	Field Service
Dowlaishwaram	... April 1856	Oct. 1859	Godaveri anicut
Burma	... Dec. 1859	July 1862	Repairing forts, and improving roads
Dowlaishwaram	... July 1862	Dec. 1863	
Lakadi, Wynaad	... Feb. 1864	May 1864	Tambercheri Ghat
Coimbatore	... May "	Sept. "	
Lakadi, Wynaad	... Sept. "	Mar. 1866	Tambercheri Ghat
Bangalore	... Mar. 1866	Sept. "	
Lakadi, Wynaad	... Sept. "	May 1868	Tambercheri Ghat
Bangalore	... May 1868	April 1869	
Port Blair	... May 1869	May 1870	Convict barracks
Bangalore	... May 1870	Sept. 1872	
Nilgiris	... Sept. 1872	Mar. 1876	Work under the P.W.D.
Bangalore	... Mar. 1876	Mar. 1877	Water supply
Bellary, Kadapah, and Kurnool	... Mar. 1877	Jan. 1878	Famine relief works
Bangalore	... Jan. 1878	Dec. "	
Afghanistan	... Jan. 1879	June 1879	Field Service
Bangalore	... July "	Oct. "	
Rangoon	... Nov. "	Feb. 1881	
Bangalore	... Mar. 1881	Mar. 1884	One section proceeded to Egypt on Field Service
Egypt (Detach.)	... Aug. 1882	Oct. 1882	
Aden	... Mar. 1884	Sept. 1886	Aden Defences

On reorganisation of the Corps on 16-12-1885, it became 5th Company.

Bangalore	... Sept. 1886	Jan. 1888	
Shan Hills	... Mar. 1888	Mar. 1889	Field Service
Chin Hills	... April 1889	May 1890	
Mandalay	... May 1890	April 1891	

STATION.	FROM	TO	SPECIAL EMPLOYMENT.
Shanghai	... Nov. 1900	April 1901	
Weiheiwei	... April 1901	June "	
Secunderabad	... June "	Nov. 1903	
Became No. 11 Company under I.A.O. dated Simla 7-12-1903.			
Bangalore	... Nov. 1903	May 1907	
Ootacamund	... May 1907	April 1908	
Bangalore	... April 1908	Nov. 1909	
Rawal Pindi	... Nov. 1909	Date	Detachment in Chitral Oct. 1909 to date.

Stations of "D" Company. (*Now No. 12 Company*).

Moulmein	... July 1831	Nov. 1832	
Madras	... Nov. 1832	Feb. 1834	
Kimedi	... Feb. 1834	April 1835	Field Service
Madras	... July 1835	Aug. 1840	Quarrying rock for break-water; Red Hills water supply; and Reclamation.
Nilgiris	... Aug. 1840	Feb. 1843	Ghat works
Bangalore	... Feb. 1843	April 1844	
Aden	... April 1844	April 1847	Defence work
Coorg	... April 1847	Nov. 1849	
Dowlaishwaram	... Dec. 1849	April 1852	Godaveri anicut
Bezwarda	... April 1852	Jan. 1855	Kistna anicut
Dowlaishwaram	... Jan. 1855	Dec. "	
Rangoon	... Dec. "	Oct. 1859	
Madras	... Nov. 1859	Jan. 1861	Repairs to Fort St. George
Bangalore	... Feb. 1861	Mar. 1862	
Lakadi, Wynaad	... Mar. 1862	Mar. 1866	Tambercheri Ghat
Bangalore	... Mar. 1866	Mar. 1867	
Port Blair	... Mar. 1867	May 1868	Convict barracks
Secunderabad	... Mar. 1868	Dec. 1872	Trimulgherry barracks
Bangalore	... Jan. 1873	Nov. 1875	
Rangoon	... Dec. 1875	Feb. 1879	Pagoda defences
Bangalore	... Mar. 1879	July "	
Rumpa District	... Jan. "	Dec. 1880	Suppression of disturbances etc.
Bangalore	... Jan. 1881	Jan. 1883	
Ootacamund	... Jan. 1883	April 1885	
Bangalore	... April 1885	Oct. "	
Burma	... Nov. "	Mar. 1887	Field Service
On reorganization of the Corps on 16-12-1885, it became 4th Company.			
Bangalore	... Mar. 1887	Oct. 1891	
Dipupani, Assam	... Nov. 1891	Mar. 1892	
Bangalore	... April 1892	Oct. "	
Chin Hills	... Nov. "	April 1894	Det. on F.S. in 1893
Thayetmyo	... April 1894	Oct. "	
Bangalore	... Nov. "	Aug. 1897	
Tirah Expedition	Aug. 1897	April 1898	Field Service
Malakand	... April 1898	July "	
Khar	... July "	Mar. 1899	
Secunderabad	... April 1899	Dec. "	
Bangalore	... Dec. "	Mar. 1903	
Sikkim and			
Thibet Expn.	... Mar. 1903	Sept. 1904	

Became No. 12 Company under I.A.O. dated Simla 7-12-1903.

STATION.	FROM	TO	SPECIAL EMPLOYMENT.
Bangalore	... Oct. 1904	May 1907	
Ootacamund	... May 1907	April 1908	
Bangalore	... April 1908	Date	

Stations of the "E" Company. (Now No. 13 Company).

Perambore	... July 1831	Aug. 1831	
Trimonchy	... Aug. "	Feb. 1832	Poonamallee-Vellout road
Bangalore	... Mar. 1832	Nov. 1833	Repairing the fort
Nilgiris	... Nov. 1833	Mar. 1834	Coonoor Ghat
Coorg	... Mar. 1834	June "	Field Service with the Western Column under Col. Foulis.
Nilgiris	... June "	Dec. "	Coonoor Ghat
Coorg	... Jan. 1835	Sept. 1838	Mercara-Fraserpet road, and Mercara-Mangalore road <i>via</i> Sampagi Ghat.
Bangalore	Sept. 1838	Nov. 1839	
Berhampore and Ganjam	... Dec. 1839	Mar. 1845	Constructing and repairing roads.
Bangalore	... April 1845	Oct. "	
Aden	... Nov. "	Nov. 1848	Defence work
Coorg	... Dec. 1848	Feb. 1852	
Burma	... Feb. 1852	Mar. 1856	Field Service
Dowlaiswaram	... April 1856	Oct. 1859	Godaveri anicut
Burma	... Dec. 1859	July 1862	Repairing forts, and improving roads
Dowlaiswaram	... July 1862	Dec. 1863	
Lakadi, Wynaad...	Feb. 1864	May 1864	Tambercheri Ghat
Coimbatore	... May "	Sept. "	
Lakadi, Wynaad...	Sept. "	Mar. 1866	Tambercheri Ghat
Bangalore	... Mar. 1866	Sept. "	
Lakadi, Wynaad...	Sept. "	May 1868	Tambercheri Ghat
Bangalore	... May 1868	April 1869	
Port Blair	... May 1869	May 1870	Convict barracks
Bangalore	... May 1870	Sept. 1872	
Nilgiris	... Sept. 1872	Mar. 1876	Work under the P.W.D.
Bangalore	... Mar. 1876	Mar. 1877	Water supply
Bellary, Kadapah, and Kurnool	... Mar. 1877	Jan. 1878	Famine relief works
Bangalore	... Jan. 1878	Dec. "	
Afghanistan	... Jan. 1879	June 1879	Field Service
Bangalore	... July "	Oct. "	
Rangoon	... Nov. "	Feb. 1881	
Bangalore	... Mar. 1881	Mar. 1884	One section proceeded to Egypt on Field Service
Egypt (Detach.)	... Aug. 1882	Oct. 1882	
Aden	... Mar. 1884	Sept. 1886	Aden Defences

On reorganisation of the Corps on 16-12-1885, it became 5th Company.

Bangalore	... Sept. 1886	Jan. 1888	
Shan Hills	... Mar. 1888	Mar. 1889	Field Service
Chin Hills	... April 1890	May 1890	
Mandalay	... May 1890	April 1891	

STATION.	FROM	TO	SPECIAL EMPLOYMENT.
Bangalore	... May 1891	Sept. 1895	
Malakand	... Oct. 1895	April 1898	Field Service
Bangalore	... May 1898	Jan. 1901	
Camp Tilkan	... Feb. 1901	Jan. 1902	} Kushalgarh Kohat } Thall railway
Camp Gumbat	... Jan. 1902	April "	
Bangalore	... April "	Nov. 1903	

Became No. 13 Company, under I.A.O. dated Simla 7-12-1903.

Secunderabad	... Nov. 1903	Oct. 1906	
Bangalore	... Oct. 1906	Date.	

Stations of "F" Company. (Now No. 14 Company).

Nizam's Domi- nions	... July 1831	May 1832	Hyderabad-Masulipatam road
Bangalore	... May 1832	July "	
Malacca	... July "	Sept. "	Proceeded on Field Service but returned from Penang
Bangalore	... Sept. "	Mar. 1834	
Coorg	... Mar. 1834	June "	Field Service, with Eastern Column under Brigadier Lindsay
Nilgiris	... June "	Dec. "	Coonoor Ghat
Salem (Detach.)	... June "	April 1838	Sholagiri Ghat
Coorg	... Jan. 1835	Feb. 1840	Roads from Mercara to Fraserpet, and to Mangalore <i>via</i> the Sampagi Ghat
China	... April 1840	Oct. 1842	Field Service
Hongkong	... Nov. 1842	Oct. 1846	Detachments at Chusan, and Koolongsoo. Erecting fortifications and building barracks
Coorg	... Nov. 1846	May 1851	
Periambadi	... May 1851	Sept. "	Ghat work
Aden	... Sept. "	Dec. 1854	Defence works
Dowlaishwaram	... Feb. 1855	Nov. 1855	
Bezwada	... Nov. "	July 1857	Kistna anicut
Secunderabad	... July 1857	June 1859	Constructing the Entrenchment
Dowlaishwaram	... July 1859	Oct. 1859	
Burma	... Dec. "	Mar. 1862	Repairing Tonghoo fort and station
Dowlaishwaram	... Mar. 1862	Dec. "	
Jeypore	... Dec. "	Mar. 1863	
Dowlaishwaram	... April 1863	Mar. 1864	
Secunderabad	... April 1864	Dec. 1866	
Seroncha	... Jan. 1867	Nov. 1867	Establishing Cantonment
Secunderabad	... Dec. "	Jan. 1869	Work on Entrenchment
Bangalore	... Feb. 1869	April 1870	
Port Blair	... May 1870	Feb. 1871	Convict barracks
Bangalore	... Feb. 1871	Mar. 1876	
Nilgiris	... April 1876	Dec. 1878	Work under the P.W.D.
Bangalore	... Dec. 1878	Feb. 1879	
Burma	... Feb. 1879	Jan. 1882	Thayetmyo and Rangoon defences

STATION.	FROM	TO	SPECIAL EMPLOYMENT.
Bangalore	... Feb. 1882	Feb. 1885	
Suakin	... Mar. 1885	Dec. "	Field Service
Bangalore	... Dec. "	Dec. 1886	

On reorganisation of the Corps on 16-12-1885, it became 6th Company.

Secunderabad	... Dec. 1886	Sept. 1889	
Burma	... Sept. 1889	Nov. "	
Chin-Lushai Expedition	... Nov. "	June 1890	Field Service
Mandalay	... June 1890	Mar. 1891	
Chin Hills	... Mar. 1891	June "	
Mandalay	... June "	Nov. "	
Chin Hills	... Dec. "	May 1892	
Mandalay	... May 1892	Oct. "	
Bangalore	... Oct. "	April 1895	
Chitral F. F.	... April 1895	Aug. "	Field Service
Bangalore	... Sept. "	Nov. "	
Secunderabad	... Jan. 1896	Mar. 1899	
Malakand	... Mar. 1899	Nov. "	
Chakdara	... Nov. "	Feb. 1900	
Khar	... Feb. 1900	May "	
Malakand	... May "	Oct. "	
Khar	... Oct. "	Mar. 1901	
Bangalore	... April 1901	Nov. "	
Nandidroog	... Nov. "	Dec. "	
Bangalore	... Dec. "	Sept. 1903	
Chitral	... Oct. 1903	Oct. 1904	

Became No. 14 Company under I.A.O. dated Simla 7-12 1903.

Bangalore ... Nov. 1904. Date

Station of the "G" Company. (Now No. 9 Company).

Perambore	... July 1831	Aug. 1831	
Trimonchy	... Aug. "	Dec. "	Poonamallee-Vellout road
Malacca	... Dec. "	April 1833	Field Service
Madras	... April 1833	Nov. "	
Nilgiris	... Nov. "	Jan. 1834	
Nizam's Dom- inions	... Feb. 1834	July 1836	Hyderabad-Masulipatam road
Berhampore	... July 1836	Nov. "	
Gumsur	... Nov. "	April 1837	Field Service
Samalkotta	... April 1837	Nov. "	
Masulipatam	... Dec. "	Aug. 1838	Repairing the fort

On reduction of Establishment under G.O.G. dated 20-12-1837, it was absorbed into "B" Company, but it was raised again under G.O.C.C. dated 8-9-1854.

Dowlaishwaram	... Jan. 1855	Nov. 1855	
Burma	... Dec. "	Oct. 1859	Thayetmyo defences
Madras	... Nov. 1859	Sept. 1860	Repairing Fort St. George
Lakadi, Wynaad	... Oct. 1860	Mar. 1864	Ghat work
Cannanore	... Mar. 1864	Dec. "	
Port Blair	... Jan. 1865	April 1866	Convict barracks
Bangalore	... May 1866	Dec. 1867	
Wellington	... June 1867	Nov. "	Detachment on Kotagiri road under the P.W.D.

STATION.	FROM	TO	SPECIAL EMPLOYMENT.
Davigudiam ... Jan.	1863	May 1863	Work under the P.W.D.
Dowlaishwaram ... May	"	Mar. 1864	
Secunderabad ... April	1864	Oct. 1857	
Abyssinia ... Dec.	1867	June 1868	Field Service
Bangalore ... July	1868	Oct. "	
Lakadi, Wynaad... Oct.	"	May 1869	Tambercheri Ghat.
Bangalore ... June	1869	Nov. 1870	
Bellary ... Nov.	1870	Feb. 1872	Work under the P W.D.
Dowlaishwaram ... Feb.	1872	Dec. "	Ditto.
Secunderabad ... Jan.	1873	Oct. 1877	
Bangalore ... Oct.	1877	May 1878	
Madras ... May	1878	Nov. "	Famine relief works, and Beach Batteries
Afghanistan ... Jan.	1879	June 1879	Field Service.
Bangalore ... June	"	Dec. 1885	Mysore State Railway from March to June 1881.

This company was reduced on reorganisation of the Corps on 16-12-1885

Stations of the "L" Company.

This company was raised in accordance with G.O.C.C. dated 20-11-1857

Dowlaishwaram ... Jan.	1858	Jan. 1858	
Central Provinces Jan.	"	Nov. 1859	Field Service
Dowlaishwaram ... Nov.	1859	Mar. 1860	
Madras ... April	1860	July 1862	Fort St. George, and Chepauk

This company was reduced in accordance with G.O.C.C. dated 30-1-1862.

Stations of the "M" Company.

This company was raised in accordance with G.O.C.C. dated 20-11-1857.

Dowlaishwaram ... Jan.	1858	June 1859	
Secunderabad ... June	1859	July 1862	

This company was reduced in accordance with G.O.C.C. dated 30-1-1862.

APPENDIX C.

Commandants of the Corps of Madras Pioneers and Sappers and Miners, from 1790.

Corps of Pioneers.

11-2-1790 to 1801	Lieut. W. Dowse,	Madras Infantry.
1802	Lieut. W. P. Heitland,	" "

Battalions of Pioneers.

1st Battalion.

1803 to 1804	Captain W. P. Heitland,	Madras Infantry.
1805 " 1808	E. B. Bagshaw,	" "
1809 " 1812	" R. Hughes,	" "

1813 to 1814	Captain E. W. Snow,	Madras Infantry.
1814 " 1815	" A. N. Bertram,	" "
1816 " 1819	" R. McCraith,	" "
1820 " 1824	" W. Milne,	" "
1825	Lieut. Wheeler and Captain Crowe,	" "
1826	Captains Crowe, Wheeler, and Sinclair,	" "
1827 to 30th June 1831	Captain W. Murray,	" "

2nd Battalion.

1803 to 1809	Captain J. Fitzpatrick,	Madras Infantry.
1810 " 1819	" T. Smithwaite,	" "
1820 " 1824	" E. Richardson,	" "
1825 " 30th June 1831	Captain E. Cadogan,	" "

Corps of Pioneers.

1831	Major E. Cadogan,	Madras Infantry.
1832 to 1833	Captain W. Murray,	" "

Corps of Sappers and Miners.

RANK ON APPOINTMENT.	NAME.	FROM	To
Captain	Lawe, A.	1-7-1831	4-3-1833
"	Underwood, G. A.	5-3-1833	8-1-1838
"	Smith, J. T.	9-1-1838	5-7-1838 Officiating.
Lieutenant	Pears, T. T.	6-7-1838	26-8-1844
"	Rundall, J. W.	27-8-1844	17-12-1852 Died on F. S.
"	Carpendale, J.	18-12-1852	12-1-1857
"	Winscom, G. V.	13-1-1857	8-11-1857 Officiating.
"	Hill, C. E. D.	9-11-1857	6-1-1869
Captain	Rogers, H. J.	15-8-1861	25-2-1862 "
"	Winscom, G. V.	26-2-1862	16-4-1863 "
Major (Lt.-Col.)	Prendergast, H.		
	N. D., v.c., c.B.	7-1-1869	9-9-1880
"	Prendergast, H. L.	15-5-1874	21-5-1876 "
"	Sim, C. A.	10-9-1880	20-2-1884
"	Hamilton, A. F.	21-2-1884	27-10-1890
"	Wilkieson, C. B.	28-10-1890	27-10-1897
"	Goodwyn, H. E.		
	D.S.O.	28-10-1897	8-5-1898 "
Lt.-Col.	Grant, S.	9-5-1898	3-8-1902
Major	Russell, B. B.	4-8-1902	5-11-1902 "
"	Roe, C. H.	6-11-1902	24-11-1902 "
Lt.-Col.	Bond, F. G., c.B.	25-11-1902	23-3-1904
Major	Roe, C. H.	24-3-1904	31-5-1904 "
"	Evans, U. W.	1-6-1904	5-4-1905 "
Lt.-Col.	Anderson, F. J.	6-4-1905	20-6-1909
"	Roe, C. H.	21-6-1909	

Adjutants of the Corps from 1831 to date.

Lieut.	Lawford, E.	1-7-1831	
"	Stafford,	1834	
"	Rundall, J. W.	1842	1844
"	Carpendale, J.	1849	

RANK	NAME.	FROM	To
2nd-Lieut.	Gahagan, T. E.	1853	
Lieut.	Prendergast, H. L.	1857	1859
"	Hindle, J. W.	May 1859	Jan. 1864
"	Hamilton, A. F.	31-1-1864	28-11-1878
"	Wilkieson, C. B.	29-11-1878	15-12-1885
"	Anderson, F. J.	16-12-1885	5-9-1888
"	Sorsbie, R. F.	6-9-1888	5-9-1893
"	Fraser, T.	6-9-1893	5-9-1898
"	Sanders, G. A. F.	6-9-1898	30-9-1899
"	Robertson, W.	1-10-1899	30-9-1904
"	Molesworth, E. K.	1-10-1904	2-11-1909
"	Bushell, C. W.	4-11-1909	

APPENDIX D.

Alphabetical list of Officers with the Corps of Sappers and Miners from 1831 to 1910.

NAME.	CADRE.	FROM	To
Agnew, H. C.	... R.E.	8-9-1903	date
Ainslie, C.	... "	Oct. 1888	10-12-1901
Allen, H.	... 21st M.I.	April 1852	Dec. 1853
Anderson F. J.	... R.E.	Nov. 1884	Sept. 1888
		6-4-1905	20-6-1909 Comdt. 1905-09
Anderson, C. F.	... "	22-5-1896	29-11-1896
Andrews Speed, H. S.	... "	Jan. 1882	7-3-1890
Armstrong, H. C.	... Eng.	Jan. 1834	Sept. 1838
Attree, F. W. T.	... R.E.	Feb. 1878	Feb. 1887
Babington, W.	... R.E.	27-3-1891	May 1895
Baddeley, W. L. C.	... "	Nov. 1874	Aug. 1875
Badgley, J. M. T.	... "	April 1884	3-7-1890
Bailey, W. S.	... 1st M.F.	Feb. 1861	Jan. 1865
Baillie, J. E.	... 8th M.I.	Dec 1856	Mar. 1859
Baldwin, P. B.	... R.E.	Aug. 1878	Nov. 1879
		Nov. 1880	Nov. 1884
Barnet, H. H.	... "	Oct. 1885	Nov. 1886
Barstow, J. B.	... "	Nov. 1894	date
Bassett, T. P.	... "	12-12-1904	date
Baylay, F.	... "	21-11-1887	4-1-1888
		14-6-1888	Nov. 1890
Beever, C. N.	... "	Oct. 1885	Aug. 1886
Begbie, G. J. F.	... 35th M.I.	Jan. 1855	Mar. 1858
Begbie, E. W.	... Gen. List	June 1871	Nov. 1888
Bell, J. H.	... Eng.	Aug. 1831	Dec. 1834
Bird, F. H.	... 33rd M.I.	Feb. 1865	July 1872
Birdwood, W. J.	... Eng.	Mar. 1840	Dec. 1842
Birney, C. F.	... R.E.	28-12-1903	30-9-1904
Bland, E. H.	... "	Jan. 1889	Oct. 1889
Blunt, G.	... "	Jan. 1870	May 1871
Blunt, R. J.	... 25th M.I.	Feb. 1856	April 1857

Died on 21-7-1872

NAME.	CADRE.	FROM	TO
Boddy, O. V.	... R.E.	Feb. 1873	June 1873
		Feb. 1879	Jan. 1881
		April 1885	June 1885
Boileau, A. J. M.	... Eng.	Sept. 1840	Dec. 1843
		Jan. 1857	July 1857
Boileau, L. F.	... R.E.	Mar. 1885	Sept. 1885
Bolton, R. H.	... 16th M.I.	Mar. 1856	May 1856
Bond, F. G.	... R.E.	25-11-1902	23-3-1904 Comdt. 1902-04
Brockman, R. R. E	... "	April 1864	Nov. 1864
Brookes, C. H.	... "	Feb. 1871	Aug. 1871
Brown, P. A.	... 1st M.F.	Nov. 1854	May 1858
Burne, F. H. C.	... R.E.	1-8-1897	22-3-1898
Burton, W. H.	... Eng.	Sept. 1857	April 1858
Bushell, C. W.	... R.E.	5-3-1904	date
Bushell, F. H.	... "	27-10-1900	Oct. 1906 Died on 21-10-1906
Butt, A. J.	... 44th M.I.	Jan. 1855	July 1867
Cameron, H. A.	... R.E.	19-5-1896	29-11-1896
Campbell, D. J. P.	... 7th M.I.	Jan. 1855	May 1862
Campbell, J.	... Eng.	Jan. 1844	July 1845
Cardale, W. T.	... 25th M.I.	Nov. 1854	Sept. 1855
Carpendale, J.	... Eng.	July 1843	Mar. 1857 Comdt. 1852-57
Carter, G. M.	... 1st M.F.	Dec. 1852	April 1854
Chambers, C. J. O.	... S.C.	July 1869	Oct. 1877
Chancellor, J. R.	... R.E.	31-5-1895	4-5-1900
Chapman, L. P.	... "	Feb. 1887	23-3-1892
Chatterton, J. D.	... 33rd M.I.	Feb. 1865	Oct. 1865
Clarke, T. G.	... 21st M.I.	Feb. 1857	Aug. 1857
Clarke, S. C.	... Eng.	Jan. 1862	Sept. 1862
Clerk, R. M.	... Gen. List	Oct. 1867	Nov. 1867
Close, G. D.	... R.E.	Mar. 1887	April 1887
		22-1-1890	6-2-1890
Coaker, W. H.	... "	Dec. 1867	July 1868
Cockburn, A. W.	... "	Nov. 1873	Mar. 1895
Collins, A. E. J.	... "	23-3-1910	date
Conner, W. D.	... "	Feb. 1878	Dec. 1882
		May 1885	Aug. 1886
Conran, W. D. B.	... "	6-11-1905	date
Cotter, E. W.	... "	Dec. 1874	Jan. 1875
		23-2-1885	Mar. 1890
Cotton, F. C.	... Eng.	Feb. 1840	Dec. 1842
Crawfurd, H. P. R.	... 34th M.I.	Feb. 1863	Oct. 1877
Crewe, H. P.	... 14th M.I.	Feb. 1863	July 1864
Crofton, H. J.	... R.E.	Feb. 1887	June 1887 Died 26-6-1887
Crookshank, A. A.	... "	19-12-1903	30-9-1904
Cumberlege, A. F.	... "	Oct. 1891	May 1892
Cumming, W. G.	... Eng.	Nov. 1862	Jan. 1864
Cunningham, C.	... R.E.	Jan. 1864	Oct. 1864
		Oct. 1866	Oct. 1869
Dakeyne, H. F.	... 22nd M.I.	Nov. 1857	May 1872
Dale, H. M.	... Gen. List	June 1870	Dec. 1878

NAME.	CADRE.	FROM	TO
Dallas, J.	... R.E.	Jan. 1886	Sept. 1886
Dalrymple, R.	... 19th Hu.	Jan. 1868	July 1868
Daniel, E. S.	... 1st M.F.	Jan. 1854	Dec. 1854
Darling, C. H.	... R.E.	Nov. 1876	Oct. 1883
		April 1885	Sept. 1885
Dealy, J. A.	... "	Feb. 1887	June 1889
		Dec. 1889	Aug. 1890
Dennison, G.	... Eng.	Feb. 1850	Dec. 1853
Dick, G. J.	... 3rd. M.I.	June 1855	July 1855
Digby, T.	... R.E.	Mar 1875	Feb. 1881
Ditmas, F.	... Eng.	Aug. 1831	April 1834
Dobbie, G. S.	... 39th M.I.	Jan. 1839	Oct. 1841
Dobree, F. W.	... S.C.	Feb. 1863	Oct. 1865
Dobson, A. E.	... R.E.	Feb. 1872	April 1873
		Oct. 1879	June 1880
			Died on active service on 20-6-1880
Doria, R. A.	... 5th M.I.	Jan. 1841	Dec. 1842
Dorward, A. R. F.	... R.E.	Dec. 1870	Nov. 1871
		Dec. 1878	Nov. 1880
		April 1885	May 1886
Drury, C. G.	... S.C.	Feb. 1870	Mar. 1874
Duff, G. M.	... R.E.	Mar. 1887	Mar. 1887
		Sept. 1887	31-3-1888
Dunsterville, E. L.	... "	Jan. 1888	22-1-1899

Earle, R. G.	... R.E.	5-3-1907	date
Edgcambe, A. R.	... Eng.	Nov. 1861	Dec. 1862
Elliott, H. R.	... 42nd M.I.	Feb. 1860	Nov. 1870
Ellis, C. C.	... R.E.	Mar. 1875	Aug. 1881
Ellis, W. M.	... "	14-7-1884	13-6-1888
Elms, F.	... 16th M.I.	May 1854	Sept. 1854
Evans, U. W.	... R.E.	Feb. 1887	22-2-1908
Ewart, A. J. P.	... 16th M.I.	June 1854	Feb. 1855
Ewbank, W.	... R.E.	Feb. 1887	June 1888
			Offg. Comdt. 04-05

Faber, H. R.	... R.E.	Dec. 1872	Mar. 1874
Farquhar, W. G.	... 10th M.I.	Jan. 1854	May 1856
Filgate, A. J.	... Eng.	Jan. 1860	Sept. 1863
Finlay, G. C.	... 12th M.I.	Mar. 1863	June 1867
Fischer, J. F.	... Eng.	Feb. 1850	Dec. 1850
Foord, G. C.	... 7th M.I.	May 1856	May 1857
Foord, H. H.	... 16th M.I.	Sept. 1857	Dec. 1857
Foord, M. E.	... 23rd M.I.	June 1859	Nov. 1868
Ford, B.	... 12th M.I.	June 1853	Mar. 1854
Forster, D.	... R.E.	5-12-1901	date
Fox, F. R.	... 14th M.I.	April 1856	July 1858
		Feb. 1863	Oct. 1863
Fraser, T.	... R.E.	Mar. 1889	14-3-1900
Fraser, H. A. D.	... "	Mar. 1889	Oct. 1889
Fulton, J. R.	... 37th M.I.	Feb. 1863	Jan. 1866
Furlong, J. I. R.	... 20th M.I.	Jan. 1852	Dec. 1853
			Died 8-11-1868

NAME.	CADRE.	FROM	TO
Gahagan, A.	... 10th M.I.	Jan. 1858	Jan. 1859
Gahagan, T. E.	... Eng.	Dec. 1850	Feb. 1854
Gale, W. A.	... R.E.	Feb. 1878	Mar. 1881
Garstin, J. A.	... "	18-10-1899	26-5-1904 Killed in action
Gib, W. A.	... 48th M.I.	Sept. 1854	May 1855
Gillam, R. A.	... R.E.	18-7-1893	30-9-1899
Glanville, F.	... "	Jan. 1884	20-3-1894
Goldie, M. H. G.	... "	Feb. 1871	Mar. 1871
Goldingham, R. E. D.	... "	13-7-1900	6-6-1901
Goldney, W. H.	... "	Dec. 1874	April 1883
Goodwyn, H. E.	... "	Feb. 1878	3-6-1898 Offg. in com- mand 1897-98.
Gordon, H. J. G.	... Eng.	Jan. 1857	July 1860 Drowned on service, 11-7-60
Gordon, R.	... 32nd M.I.	Aug. 1839	Feb. 1844
Grant, S.	... R.E.	9-5-1898	3-8-1902 Comdt. 1893- 1902.
Grant, S. C. N.	... "	Feb. 1877	Nov. 1878
Graves, D. A.	... "	29-6-1904	6-11-1906
Gunning, C. G.	... 37th M.I.	Jan. 1858	Oct. 1859
Haggitt, E. D.	... R.E.	Aug. 1885	Sept. 1886
Haig, F. T.	... Eng.	June 1846	Dec. 1847
Hamilton, A. F.	... "	Oct. 1862	27-10-1890 Comdt. 1884-90
Hamilton, R. E.	... R.E.	Feb. 1875	July 1875
		Dec. 1878	April 1880
Hamilton, R.	... R.E.	28-11-1909	date
Hammond, W. C.	... Eng.	Dec. 1858	April 1859
Hankin, F. G.	... 15th M.I.	May 1854	April 1855
Harington, E. H.	... 2nd E.L.I.	April 1849	Dec. 1849
Harris, A. M.	... 10th M.I.	Jan. 1852	Dec. 1853
Harris, T. B.	... R.E.	29-3-1806	date
Harrison, T.	... "	Oct. 1890	June 1893
Havelock, A. C.	... 42nd M.I.	June 1859	Aug. 1860
Hemming, N. M.	... R.E.	17-10-1894	24-7-1900
Henderson, E. G.	... "	27-6-1900	6-6-1901
Henderson, R.	... Eng.	Feb. 1840	Dec. 1843
Henderson, P. D.	... S.C.	Jan. 1871	May 1871
Henderson, C. B.	... R.E.	Feb. 1873	April 1873
		Dec. 1878	Sept. 1880
Henry, G.	... "	Dec. 1871	June 1874
		Oct. 1879	Nov. 1881
		Oct. 1888	Aug. 1889
Hewetson, G. S. B.	... 34th M.I.	Nov. 1857	Jan. 1859
Heycock, C. H.	... R.E.	Mar. 1888	31-7-1909
Hibbert, W. G.	... "	15-4-1895	Aug. 1895
Hill, C. E. D.	... Eng.	Oct. 1857	Oct. 1870 Comdt. 1857-69
Hindle, J. W.	... 47th M.I.	Oct. 1858	Feb. 1864
Hitchins, H. W.	... Eng.	Sept. 1841	Oct. 1846
Hodgson, P. E.	... R.E.	Oct. 1895	6-1-1904
Horseley, W. H.	... Eng.	Jan. 1832	Dec. 1834
Howard, F. G.	... R.E.	10-9-1897	4-7-1902
Howes, F. A.	... Eng.	April 1879	April 1880
Howlett, A.	... S.C.	Aug. 1872	Jan. 1878

NAME.	CADRE.	FROM	To
Humfrays, I. J.	... Eng.	Jan. 1849	Dec. 1850
Hutton, G. M.	... R.E.	April 1889	20-10-1894
Irvine, F. D.	... R.E.	April 1899	date
Irving, A. B.	... 13th M.I.	May 1860	April 1865
Izat, W. R.	... R.E.	17-8-1899	15-12-1900
James, B. A.	... R.E.	Mar. 1888	2-1-1891 Killed in action
Jennings, C. J.	... 15th M.I.	April 1859	Feb. 1860
Johnson, E. P.	... R.E.	Jan. 1888	31-7-1904
		24-2-1908	date
Johnston, J. G.	... Eng.	Mar. 1840	Dec. 1842
Johnstone, A.	... 51st M.I.	June 1855	Feb. 1857
Johnstone, C. C.	... Eng.	June 1834	Nov. 1838
Kennedy, R. B.	... 23rd M.I.	Mar. 1855	Oct. 1864
Kensington, C. H. M.	R.E.	Dec. 1869	Jan. 1871
Kidner,	... "	10-5-1905	date
Langley, L.	... R.E.	Mar. 1873	May 1873
		Feb. 1879	Nov. 1880
		April 1885	June 1885
Lawe, A.	... Eng.	Aug. 1831	Mar. 1833 Commanding, 1831-33
Lawford, E.	... "	Aug. "	Dec. 1831
Lawrence, R. T. R.	... R.E.	June 1886	Nov. 1886
Learoyd, C. D.	... "	Oct. 1885	Oct. "
Le Breton, E. P.	... "	Feb. 1908	Mar. 1908 For Fd. Service
Lewis, H. L.	... "	26-11-1903	30-9-1904 "
Lindley, W. D.	... "	Feb. 1878	Feb. 1886
Litton, D. L.	... "	Mar. 1876	Aug. 1877 Died 16-8-1877.
Livesay, R. A.	... "	Mar. 1864	Nov. 1864
Loch, S. G.	... "	20-9-1895	28-5-1904
Lotbiniere, H. G. J. de	... "	23-8-1897	6-11-1897 Invalided from F.S.
Love, H. D.	... "	Dec. 1876	Oct. 1878
Lubbock, G.	... "	31-10-1891	May 1892
Lugard, H. J.	... 47th M.I.	Oct. 1859	May 1860
Luxmore, C. J. V.	... 14th M.I.	Feb. 1865	Nov. 1865
Macaulay, A.	... Eng.	Jan. 1834	Dec. 1834
MacDonnell, A. C.	... R.E.	April 1878	April 1889
MacGown, A.	... 6th M.I.	Feb. 1863	Feb. 1871
MacHutchin, J.	... 19th M.I.	Jan. 1854	May 1855
MacKintosh, H.	... 52nd M.I.	Feb. 1841	Dec. 1853
Mainwaring, J. N.	... R.E.	Jan. 1866	Mar. 1866
		Oct. 1867	July 1868

NAME.	CADRE.	FROM	To
Man, H.	... 49th M.I.	April 1841	Dec. 1845
Manley, E. N.	... R.E.	31-10-1895	May 1898
Mardell, G. S.	... 16th M.I.	Mar. 1840	April 1841
Marindin, P. S.	... Eng.	Oct. 1860	Jan. 1864
Marshall, H. J. M.	... R.E.	April 1889	16-9-1890
		25-2-1891	3-12-1905
		1-8-1909	date
Mathews, W. F.	... R.E.	21-4-1898	June 1898
Mathias, F. H.	... Gen. List	Feb. 1865	July 1869
Mathias, V. L.	... "	Oct. 1871	Aug 1873
Mayne, J. O.	... Eng.	April 1852	Dec. 1853
McClintock, R. L.	... R.E.	8-1-1905	date
McQueen, J. A.	... "	Feb. 1908	Mar. 1908
Menzies, A.	... 31st M.I.	Nov. 1854	July 1855
Middleton, J. C.	... 23rd M.I.	Sept. 1855	Jan. 1858
		June 1859	Nov. 1860
Moberley, F. J.	... Eng.	Oct. 1846	Oct. 1847
		Nov. 1865	Jan. 1866
Moberley, A. S.	... "	Dec. 1846	Dec. 1847
Molesworth, E. K.	... R.E.	30-5-1900	2-11-1909
Morant, J. L. S.	... Eng.	Jan. 1862	Jan. 1864
Morris, G. H. J. G.	... R.E.	18-2-1908	date
Morris, R. F.	... "	April 1863	April 1864
		July 1866	Mar. 1870
		Feb. 1875	May 1875
Morton, W. R.	... "	13-11-1885	7-12-1885
Mullins, J.	... Eng.	Nov. 1850	Feb. 1855
Munro, W.	... 6th M.I.	Jan. 1858	Nov 1861

Newman, E. M. T. ... R.E. Aug. 1884 22-3-1885 Killed in action

Oakes, R. F.	... Eng.	Jan. 1852	Jan. 1853
O'Connell, P. P. L.	... "	June 1845	June. 1846
Ogilvie, D. S.	... 10th M.I.	May 1857	Feb. 1861
Orr, C. A.	... Eng.	Nov. 1840	Dec. 1843
Ouchterlony, J.	... "	April 1840	Oct. 1846
Outlaw, T. F. J.	... 26th M.I.	Aug. 1839	May 1844

Palmer, G.	... R.E.	April 1886	Dec. 1888	Died of wounds 8-12-1888
Palmer, W. C.	... 4th M.I.	Aug. 1857	Sept. 1857	
Pears, T. T.	... Eng.	July 1838	Aug. 1844	Commanding 1838-44.
Pedler, J. P.	... 11th M.I.	Nov. 1857	Feb. 1858	
Pemberton, S.	... R.E.	12-12-1904	date	
Pennefather, R. P.	... Eng.	Nov. 1861	Jan. 1864	
		May 1869	June 1885	
Pennycuick, J.	... "	April 1862	April 1863	
		Oct. 1867	July 1878	

NAME.	CADRE.	FROM	TO
Petavel, J. W.	... R.E.	14-5-1894	18-11-1894
Phillimore, R. H.	... "	1-3-1901	21-10-1901
Pilcher, A. J.	... "	— 1890	— 1892
Pollard Lowsley, H. de L.	... "	4-6-1898	14-4-1899
Poulter, P. B.	... "	Dec. 1874	Jan. 1877
		Dec. 1878	June 1879
			Died on service 22-6-1879.
Power, J. P.	... Eng.	Aug. 1831	April 1835
Prendergast, H. L.	... "	May 1853	Nov. 1857
		May 1874	May 1876
			Offg. Comdt. 1874-1876
Prendergast, H. N. D.	...	Jan. 1857	July 1858
		Oct. 1867	Sept. 1880
			Commandant, 1869-80
Prince, P. E.	... R.E.	13-2-1904	date
Pringle, J. C.	... "	9-2-1906	date
Pringle, J. W.	... "	23-11-1885	6-2-1886
Prothers, M.	... S. C.	Oct. 1867	Jan. 1869
Purchas, W. R.	... R.E.	Feb. 1871	June 1871
Rawlins, H. W.	... 30th M.I.	Jan. 1847	April 1854
Rawlins, W.	... S. C.	Feb. 1863	Aug. 1863
Rawson, C. C.	... R.E.	Nov. 1870	June 1871
		Dec. 1878	Jan. 1881
Raynsford, F. M.	... 18th M.I.	Dec. 1856	July 1859
		Mar. 1864	Dec. 1867
Renny-Tailyour T. F. B.	... R.E.	Oct. 1885	Mar. 1887
Roberts, A.	... Eng.	Jan. 1832	Dec. 1832
Roberts, R. A.	... "	Mar. 1848	Mar. 1849
Robertson, W.	... R.E.	21-11-1894	13-12-1904
Roe, C. H.	... "	April 1886	31-5-1904
			Offg. Comdt. 1902 & 04.
		21-6-1909	date
			Commandant, from 21-6-1909
Rogers, H. J.	... Eng.	Nov. 1860	Dec. 1862
			Offg. Comdt. 1861-62
Romilly, F. J.	... R.E.	Feb. 1873	May 1873
		Feb. 1885	Mar. 1885
			Killed in action 22-3-1885
Rooke, B. H.	... "	30-7-1891	16-6-1897
		23-8-1897	10-4-1898
Rose, W.	... 50th M.I.	April 1856	Mar. 1865
Rundall, J. W.	... Eng.	June 1834	Dec. 1852
			Commandant 1844-52, Died on service, 17-12-1852
Rundall, F. H.	... "	Jan. 1844	Jan. 1845
Russell, B. B.	... R.E.	24-2-1898	14-2-1903
			Offg. Comdt. 1902
Ryves, J. G.	... "	Dec. 1852	Jan. 1854

NAME.	CADRE.	FROM	TO
Sage, A.	...	52nd M.I. April 1855	Jan. 1858
Sanders, G. A. F.	... R.E.	9-7-1891	30-9-1899
Sandys, E. S.	...	15-4-1898	Jan. 1899
Sankey, R. H.	... Eng.	Dec. 1848	Feb. 1850
Saunders, F. W.	... R.E.	15-10-1900	21-11-1907
Scott, A. C.	...	15-12-1897	10-4-1898
Scott, T. L.	... 19th M.I.	Oct. 1854	Jan. 1855
Scott, G. T.	... R.E.	28-4-1892	27-1-1893
Scott, C.	... Eng.	Feb. 1850	Feb. 1856
		Sept. 1857	Nov. 1858 Killed in action 23-11-1858
Shaw, J. C.	... "	Aug. 1831	Jan. 1842
Shaw Stewart, H. J. M.	... "	Mar. 1860	Dec. 1860
Shepherd, F. S.	... R.E.	Dec. 1865	Jan. 1867
Shortland, V. I.	... 24th M.I.	Jan. 1852	Aug. 1854
Shute, G. E.	... R.E.	Feb. 1877	Aug. 1884
Sim, C. A.	... Eng.	Oct. 1860	Oct. 1862
		Nov. 1877	Aug. 1884 Comdt., 1880-84
Smart, A. W.	... R.E.	Nov. 1870	Mar. 1871
Smith, R. B.	... Eng.	Jan. 1839	Aug. 1839
Smith, J. T.	...	Jan. 1838	July 1838 Offg. Comdt. 1838
Smith, H. C.	... "	Nov. 1862	May 1864
Smith, A. C.	... R.E.	Jan. 1864	Sept. 1864
		Nov. 1870	Feb. 1871
Smythe, T.	... Eng.	Aug. 1831	June 1837
Sorsbie, R. F.	R.E.	Mar. 1887	April 1887
		Aug. 1887	Aug. 1896
Stevenson, K. F.	... 43rd M.I.	Feb. 1865	Nov. 1865
Stewart, J.	... R.E.	Oct. 1885	July 1886
Stone, T. H. E.	... 9th M.I.	Dec. 1854	Feb. 1855
Strahan, W. A. D.	... 8th M.I.	Oct. 1846	Nov. 1847
Street, C. W.	... 46th M.I.	Nov. 1857	Jan. 1859
Strickland, W. G. M.	... 49th M.I.	Aug. 1854	Jan. 1855
		Mar. 1859	June 1875
Swanston, N.	... 37th M.I.	Oct. 1858	Feb. 1866
		April 1872	Feb. 1873
Swayne, H. G. C.	... R.E.	April 1883	May 1887
		June 1889	1-7-1893
Taylor, F. C.	... 20th M.I.	Nov. 1854	Dec. 1858
Thomas, R. H.	... R.E.	April 1899	July 1899
Thompson, R.	... Eng.	Jan. 1861	June 1862
		Dec. 1878	Nov. 1880
Trail, D. H.	...	Jan. 1860	Dec. 1861
Trall, W. T.	... R.E.	26-5-1893	15-2-1902
Trever, A.	... 2nd M.I.	Nov. 1861	June 1862
Tulloch, J. A. S.	... R.E.	Feb. 1887	21-12-1900
Underwood, G. A.	... Eng.	Mar. 1833	Jan. 1838 Comdg. 1833-38
Underwood, T. O.	... 22nd M.I.	June 1860	Nov. 1865

NAME.	CADRE.	FROM	TO
Vardon, S.	... Eng.	Aug. 1831	May 1832
Vaughan, H.	... „	Jan. 1853	Dec. 1853
Waghorn, W. D.	... R.E.	April 1839	Oct. 1889
Wagstaff, C. M.	... „	18-10-1899	Date
Wahab, R. A.	... „	Mar. 1876	Jan. 1881
Watling, F. W.	... „	Oct. 1895	19-10-1897
Watson, G. H. G.	... 19th M.I.	June 1848	May 1849
Watts, H.	... Eng.	Aug. 1831	Dec. 1832
Way, T. H.	... 35th M.I.	Dec. 1854	Oct. 1867
Weedon, F. F.	... R.E.	Mar. 1888	15-1-1905
Wetherall, P. J. P.	... 18th M.I.	Dec. 1856	July 1875
White, J. R.	... R.E.	25-10-1904	date
Wilkieson, C. B.	... „	Mar. 1873	May 1873
		Nov. 1874	27-10-1897 Comdt. 1890-97
Wilkieson, C. V.	... Eng.	Feb. 1846	Mar. 1854
Wilkinson, C. W.	... R.E.	23-3-1898	April 1898
Wilkinson, G.	... „	Mar. 1898	24-3-1899
Williams, G. V.	... 44th M.I.	Jan. 1859	Feb. 1861
Wilson, F. J.	... 51st M.I.	Jan. 1854	Dec. 1854
Winscom, G. V.	... Eng.	Mar. 1846	Sept. 1857 Offg. in Comd.
		Dec. 1861	April 1863 1857, & 1862-63
Winsloe, A. R.	... R.E.	12-4-1895	April 1898
Winsloe, H. E.	... „	19-3-1900	Aug. 1903
Winterbotham, F.H...	S.C.	June 1869	Feb. 1879 Died on service 14-2-1879
Wright, H. B. H.	... R.E.	April 1886	12-2-1899
Wroughton, W. N.	... 49th M.I.	Sept. 1859	June 1861
Wynch, H. St M.	... 31st M.I.	Nov. 1855	Aug. 1860

APPENDIX E.

British Officers of the Corps who have been killed in action,
or who have died on service.

DATE.	NAME.	PLACE.
4 May 1799 ...	Lieut. Cormick	... Killed at the Storm of Ser- ingapatam.
30 April 1800 ...	Capt. O. Grose	... Killed at the Assault of Arakeri
26 Aug 1811 ...	Lieut. Shepherd	... Killed at the Assault of Cornelis
26 Aug 1811 ...	Ensign McLeod	... Killed at the Assault of Cornelis
18 May 1818 ...	Lieut. T. Davies	... Killed at the Siege of Malli- gaum
29 May 1818 ...	Lieut. J. W. Nattes	... Killed at the Siege of Malli- gaum
5 April 1834 ...	2nd-Lieut. J. P. Power...	Died during the Operations in Kimedi

DATE.	NAME.	PLACE.
12 Nov. 1852	... Bt.-Capt. J. W. Rundall	Died at Prome
23 Nov. 1858	... Bt.-Capt. C. Scott	... Killed at the taking of Koili
11 July 1860	... Lt. H. J. G. Gordon	... Drowned in the Bay of Talien Wan
14 Feb. 1879	... Lt. F. H. Winterbotham	Died at Peshawar
22 June 1879	... Lieut. P. B. Poulter	... Died at Peshawar
20 June 1880	... Lieut. A. E. Dobson	... Died at Rozabad
22 Mar. 1885	... Capt. F. J. Romilly	... Killed at the Battle of Tofrek
22 Mar. 1885	... Lt. E. M. B. Newman	... Killed at the Battle of Tofrek
9 Dec. 1888	... Lieut. G. Palmer	... Mortally wounded in the Chin Hills
2 Jan. 1891	... Lieut. B. A. James	... Killed in the Assault of Thetta
26 May 1904	... Lieut. J. A. Garstin	... Killed in the Assault at Palla

British Officers of the Corps who have been wounded.

DATE.	NAME	PLACE.
25 June 1801	... Capt. W. Heitland	... Action at Tricatianur
8 Oct. 1824	... Capt. Moncrieffe	... Repulse at Kyklu
8 Oct. 1824	... Lieut. J. A. Campbell	Repulse at Kyklu
15 Dec. 1824	... Capt. Wheeler	... Capture of Kokein
15 Dec. 1824	... Lieut. J. Macartney	... Capture of Kokein
15 Dec. 1824	... Lieut. J. A. Campbell	Capture of Kokein
12 Jan. 1825	... Ensign McLeod	... Affair at Siriam
1 Dec. 1825	... Lieut. J. Smith	... Action near Prome
24 May 1841	... Lieut. J. Rundall	... Siege of Canton
18 May 1842	... Lieut. J. G. Johnston	Assault of Chapu
14 April 1852	... Bt.-Capt. J. Rundall	... Capture of Rangoon
14 April 1852	... Lieut. B. Ford	... Capture of Rangoon
20 Nov. 1857	... Major A. Boileau	... Battle of Mandisur
21 Nov. 1857	... Lieut. H. Prendergast	Battle of Mandisur
1 April 1858	... Lieut. H. Prendergast	Battle of the Betwa
3 April 1858	... Lieut. F. R. Fox	... Storm of Jhansi
13 Mar. 1858	... Ensign D. S. Ogilvie	... Capture of Lucknow
22 Mar. 1885	... Capt. C. B. Wilkieson	Battle of Tofrek
27 April 1885	... Capt. J. M. T. Badgley	Affair at Myin-mu
27 Oct. 1886	... Lieut. F. Glanville	... Affair at Zebingale
26 July 1897	... Lieut. F. W. Watling	Defence of Malakand

APPENDIX F.

Personal rewards received by Officers and Men of the Corps for Active Service.

CAMPAIGN.	NAME.	DISTINCTION.
First War in Burma.	Jemadar Andu.	Promoted Subadar, and presented with a Palankeen and allowance of Rs. 70 per mensem.

CAMPAIGN.	NAME.	DISTINCTION.
War in Coorg.	Havildar Chokalingam.	An Honorary Medal, and an increase for life of one-third of his pay.
First War in China.	Capt. T. T. Fears.	C.B. and Brevet-Majority.
"	Bt.-Capt. F. Cotton.	Brevet-Majority.
"	Sub.-Major Kumarasami.	First Class Order of British India.
War in Scinde.	Capt. R. Henderson.	C.B. and Brevet-Majority.
Second War in Burma.	Naick Muniah.	Third Class Order of Merit.
"	Naick Muttuvirapen.	"
"	Private Ramasami.	"
Suppression of the Mutiny.	Major A. Boileau.	Bt.-Lt.-Colonelcy & Brevet Colonelcy.
"	Capt. P. Brown.	Brevet-Majority.
"	Lt. H. N. D. Prendergast.	V.C. and Brevet-Majority.
"	Asst.-Surgeon T. Lowe.	Brevet-Surgeon.
"	Subadar Silavay.	Second Class Order of British India.
"	Jemadar Ali Khan.	First Class Order of British India.
"	Corporal T. Linehan.	Promoted to Sergt.
"	Subadar Silavay.	Third Class Order of Merit.
"	Jemadar Appavu.	"
"	Havildar Tiruvengadam.	"
"	Naick Narayanasami.	"
"	Private Chinnatambi.	"
"	Private Appasami.	"
"	Private Savathian.	"
"	Private Pitchamuttu.	"
"	Private Bagavathi.	"
"	Private Perumalu.	"
"	Private Chinnien.	"
Second War in China.	Capt. Shaw-Stewart.	Brevet-Majority.
Expedition to Little Andamans.	Jemadar Muttien.	Third Class Order of Merit.
War in Abyssinia.	Major H. Prendergast, V.C.	Bt.-Lieut.-Colonelcy.
"	Subadar Perumalu.	Second Class Order of British India.
"	Jemadar Chinnien.	"
War in Afghanistan.	Major C. A. Sim.	Bt.-Lieut.-Colonelcy.
"	Major Ross Thompson.	"
War in Egypt.	Major A. Hamilton.	"
"	Lieut. C. H. Darling.	Fifth Class Order of the Medjidi.
"	Subadar Jeyaram.	"
War in the Soudan.	Capt. C. B. Wilkieson.	Brevet-Majority.
Third War in Burma.	Lieut.-Col. E. W. Begbie.	Brevet-Colonelcy.
"	Capt. A. Dorward.	Brevet-Majority and D.S.O.
"	Capt. H. E. Goodwyn.	Distinguished Service Order.

CAMPAIGN.	NAME.	DISTINCTION.
Third War in Burma.	Lieut. F. Glanville.	Distinguished Service Order.
"	Havildar Marimuttu.	Promoted to Subdr.
N.W. Frontier of India, 1897-98.	Lieut. A. R. Winsloe.	Distinguished Service Order.
"	Lieut. J. R. Chancellor.	"
"	Subadar Ramasami.	Third Class Order of Merit.
"	Naick Azhagiri.	"
"	Dooly-bearer Nallatambi.	"
China 1900.	Lieut. S. G. Loch.	Distinguished Service Order.
"	Subadar Devasahayem.	Second Class Order of British India.

N.B.—The Order of Merit was instituted under G.O.G.G. No 94 of 1-5-1837.

APPENDIX G.

Indian Officers of the Corps, who have been admitted to the **Order of British India**, which was established by G.O.G.G. No. 94 of 1-5-1837.

RANK.	NAME.	2nd Class "Bahadur"	1st Class "Sirdar Bahadur"	
Subadar	Chokalingam		1-5-1837	
Sub.-Major	Kumarasami	1-5-1837	13-8-1839	
Subadar	Amarabathiy	10-2-1849		
Sub.-Major	Arumugam	15-5-1855		
Subadar	Virasami	17-9-1855	28-6-1858	A.D.C. to H. E. the Govr. 8-6-1860 and again on 18- 1-1864
Subadar	Muttien	20-11-1858		
"	Ali Khan	3-5-1859	7-5-1864	
"	Ram Singh	18-4-1861		
"	Appavu	5-11-1862	5-2-1865	
"	Viragu	3-7-1864	19-6-1865	
"	Devasahayem	6-7-1865	5-6-1868	
"	Kannyan		"	
"	Perumalu		"	
"	Viran	27-8-1866		
"	Appu	30-7-1867	"	
"	Subbarayan	5-6-1868		
"	Perumalu	10-12-1869		} For service in Abyssinia
Jemadar	Chinnayan	10-12-1869		
Subadar	Vellayan	1-5-1870	16-11-1874	
"	Lawrence	1-6-1870		
"	Narayanen	15-6-1873		
"	Chelvam	1-5-1874		
Sub.-Major	Narayanasami	1-1-1877	1-11-1879	Hon.-Lieut. 23-4-1880.

RANK.	NAME.	2nd Class "Bahadur"	1st Class "Sirdar Bahadur"	
Subadar	Gregory	10-2-1879		
"	Rajah Ram	20-1-1880	7-12-1882	
"	Francis	30-1-1882		
"	Jayaram	21-11-1882	31-10-1883	
"	Venkatachalam	8-5-1883		
"	Rajalingam	14-11-1884	1-7-1886	
"	Maduramuttu	3-6-1885		
"	Kalimuttu	23-9-1886	19-2-1888	
"	Chinnien	5-2-1887		
Sub.-Major	Arunachalam	13-8-1897		
"	Ramasami	17-5-1901		
Subadar	Devasahayem	24-1-1902	1-1-1903	Appointed to the 2nd Class for service in China
"	Shaikh Ismail	24-11-1902	5-9-1904	
Sub.-Major	Chinnasami	26-11-1905	14-1-1908	
Subadar	Alexander	23-12-1908		

APPENDIX H.

Recruiting.—The Secretary of State for India in his Despatch of the 28th November 1858, quoted on page 77, adverted to the opinion held by the late Court of Directors in favour of the enlistment of a greater number of men of the classes of which the Corps of Madras Sappers and Miners is principally composed, viz., men of inferior castes of different denominations.

Tables exhibiting the composition of the Corps of Sappers and Miners at intervals of several years, and also others shewing that of certain regiments of Indian Infantry raised in the Carnatic are given below. As the nomenclature of these tables is not precise, it may be mentioned that of the 480 officers and men of the Sappers who are shewn in the return for January 1877 under the head "Other Castes," about 370 were parayers, the rest being chucklers and men of low caste. Of the 255 Indian Christians, it may be presumed that a large proportion were parayers by descent. An abstract of the return gives

Mussulmen	...	...	...	83
Tamil	...	...	...	348
Telingas	...	...	...	124

Inferior Castes and Indian Christians ... 735

The officers incline to the opinion that the uniform good conduct of the Corps in the Field and in Quarters, is owing, not to the manner of its composition; but to the system of which "*Non recognition of caste, and obedience to every order whatever it may be,*" are the leading principles.

The maintenance, if not also the introduction, of this system must be ascribed to the Commandants and Officers of the Corps, who from the first were specially selected on account of their qualifications

N.B.—The first portion of this Appendix is taken from Appendix A. of Lt.-Col. Wilson's Historical Record published in 1877.

and it is evident that such a system might be far more easily introduced and maintained in a regiment principally composed of Indian Christians and men of inferior caste, than in one where the proportion of such men is extremely small, as is the case in the Indian Infantry Regiments of the present day (1877).

With respect to composition, two points must be considered, viz., the castes of the men, and the provinces to which they belong. The Corps of Pioneers, and that of Sappers and Miners appear to have varied very little in either of these, as the great majority has always consisted of men of inferior caste from the Carnatic.

On the other hand the composition of the Regiments of Indian Infantry is very different from what it used to be. A reference to the subjoined tables will show that Regiments raised in the Carnatic, and formerly almost entirely composed of southern men, have now (in 1877) a large proportion of Telingas in their ranks. For example.—The 1st Battalion 6th Regiment (6th M.N.I.) when it returned in 1812 from the expedition to the French Islands had 304 low caste privates, and only 155 Telingas, but in 1876 the number of low caste men in that Corps, inclusive of Indian Christians, was only 74, whereas that of Telingas was 241. In short, except in the Corps of Sappers and Miners it is believed that the number of Telingas in the Indian Army now (in 1877) preponderates, while that of Tamil, and of low caste men has diminished.

The Telinga is taller, fairer, cleaner, and more docile than the Sepoy from the Carnatic, but his character as a soldier did not stand so high.

Sir Eyre Coote in several of his reports to Government during the war of 1781-82, at which time the "Circar" Battalions were distinct from the "Carnatic" Battalions, expressed himself most unfavourably with respect to the qualifications of the Northern Circar men as soldiers, and the general opinion of the old officers of the Madras Army some thirty-five years ago was in favour of the Carnatic sepoys as compared with those from the north. There are in the Circars certain races, for instance Rachawars, and Velmawars who are well fitted for the Army, but these men seldom take service with us.

Telugu Parayers, and other low caste men of Telugu race are probably as rough and ready as their Carnatic brethren, but it is believed they are seldom enlisted.

A comparison of the composition of the Corps of Sappers and Miners with that of the Regiments of Indian Infantry generally, would probably lead to the opinion that the late Court of Directors when making the recommendation above mentioned acted with their usual sagacity; but no sufficiently accurate conclusion can be arrived at unless the returns are so framed as to give full particulars. The words Telinga and Tamil denote *race*, but give no information as to the castes of the men composing the totals shown under these heads.

The words "Telinga" and "Tamil" in the subjoined tables properly denote *race*, not *caste*. As used in the tables they may be held to mean all castes of the two races in question, except Brahmins, and men of low castes. These last are included under the head "other castes." Neither Telugu, nor Tamil Brahmins take service in the army.

Tanjore, Madura, and Tinnevely form part of the Carnatic equally with Madras, Vellore, or Trichinopoly, and they have therefore been included under that head in calculating the percentage.

Composition of the Pioneers in 1827.

Bengal	1	Mussulmen	80
Deccan	16	Hindus	631
Northern Circars	40	Tamil	832
Carnatic and Trichinopoly ...	1,232	Christians	103
Madura and Dindigal	93		
Tanjore	53		1,646
Travancore and Tinnevely... ..	59		
Malabar and Bombay	29		
Mysore	104		
Mahratta	19		
	1,646		

There are no means of ascertaining the number of men of inferior caste included under the heads Hindu and Tamil.

Carnatic ... 87.30 per cent,
Northern Circars ... 2.43 "

Composition of the Sappers and Miners in 1866.

Country.	Indian Officers.	Havildars.	Naicks.	Buglers.	Privates.	Caste.	Indian Officers.	Havildars.	Naicks.	Buglers.	Privates.
Hindustan	1	1	...	...	48	Christians	4	12	10	6	142
Northern Circars	2	2	5	2	157	Mussulmen ... ..	...	3	7	...	58
Central Carnatic (Madras, Vellore) ...	15	38	73	13	582	Brahmins and Rajputs ... ..	...	1	...	...	...
Southern Carnatic (Trichinopoly)	2	5	9	1	126	Mahrattas ... ..	...	...	...	...	5
Tanjore, Madura, and Tinnevely	1	3	2	...	68	Telingas	4	2	19	...	202
Baramahal ... ..	...	...	...	...	...	Tamil	5	13	11	...	190
Ceded Districts	1	...	...	...	14	Other Castes	7	18	42	2	511
Mysore ... ..	...	...	...	4	113	Indo Britons ... ..	...	...	...	12	...
Total	20	49	89	20	1108	Total	20	49	89	20	1108

Carnatic ... 70 per cent. Telingas ... 18.23 per cent.
Northern Circars 14.16 " Tamil ... 17.14 "
Other Castes 46.11 " } 58.92.
Christians... 12.81 " }

Composition of the "Queen's Own" Sappers and Miners in 1877.

Country.	Indian Officers.	Havildars.	Naicks.	Buglers.	Privates.	Caste.	Indian Officers.	Havildars.	Naicks.	Buglers.	Privates.
Hindustan	1	...	1	1	7	Christians	4	7	9	9	224
Northern Circars ... ..	...	3	7	...	127	Mussulmen	1	2	4	...	76
Central Carnatic (Madras, Vellore) ...	8	27	51	13	700	Brahmins and Rajputs ... ..	...	1	...	...	3
Southern Carnatic (Trichinopoly)	6	5	3	2	90	Mahrattas ... ..	...	...	...	...	3
Tanjore, Madura, and Tinnevely	3	4	4	1	51	Telingas	3	4	7	...	110
Baramahal ... ..	...	1	...	...	2	Tamil	3	10	21	...	311
Ceded Districts ... ..	...	1	6	1	35	Other Castes	5	20	43	1	411
Mysore	2	2	12	3	132	Indo Briton ... ..	...	...	...	8	4
						Europeans ... ..	...	...	...	3	...
Total	20	43	84	21	1144	Total	20	43	84	21	1144

Carnatic	... 73.51 per cent.	Telingas	... 9.61 per cent.
Northern Circars	11.11	Tamil	... 27.18
	"	Other Castes	35.92
		Christians	... 29.84
			} 65.76

Composition of the 1st Battalion 2nd Regiment, now the 2nd Regt.

M.N.I. (raised in the Carnatic) in 1810, and in 1876.

1810.

Bengal	.. .. .	8	Mussulmen.. .. .	364
Deccan	.. .. .	22	Hindus	261
Northern and Guntur Circars	153		Malabars	254
Carnatic and Trichinopoly	265			
Madura and Dindigal	.. 61			879
Tanjore	.. .. .	130		
Travancore and Tinnevely	23			
Malabar and Bombay	.. 2			
Mysore	.. .. .	205		
Mahratta	.. .. .	10		
		879		

N.B.—There are no means of ascertaining any particulars regarding these men, but it may be presumed that the term "Hindus" comprises those whose language was Telugu, and the term Malabar those who spoke Tamil.

Carnatic	.. 55.74 per cent.	Mussulmen	.. 41.41 per cent.
Northern Circars	17.40	Hindus	.. 29.70
	"	Malabars	.. 28.89
			"

1876.

Country.	Indian Officers.	N.C.O.s	Buglers.	Privates.	Caste.	Indian Officers.	N.C.O.s	Buglers.	Privates.
Hindustan	.. 1	3	3	8	Indian Christians	.. .. .	3	2	17
Northern Circars	.. 2	6	..	203	Mussulmen	.. .. .	8	40	203
Central Carnatic	.. 2	20	11	116	Brahmins and	.. .. .	1	1	3
(Madras, Vellore).					Rajputs.	.. .. .		
Southern Carnatic	.. 3	13	1	39	Mahrattas	.. .. .	3	..	6
(Trichinopoly).					Telingas	.. .. .	2	19	240
Tanjore, Madura, and	.. 1	13	..	93	Tamil	.. .. .	5	13	68
Tinnevely.					Other Castes	.. .. .	2	..	40
Baramahal	.. .. .	2	..	9	Indo Britons	.. .. .	..	14	..
Ceded Districts	.. 1	4	..	10					
Mysore	.. 6	20	1	99					
Total...	16	81	16	577	Total...	16	81	16	577

Carnatic	.. 42.98 per cent.	Mussulmen	.. 35.17 per cent.
Northern Circars	35.17	Telingas	.. 41.57
	"	Tamil	.. 11.78
		Christians	.. 2.94
		Other Castes	.. 6.93
			} 9.87

*Composition of the 1st Battalion 6th Regiment, now the 6th Regt.
M.N.I. (raised in the Carnatic) in 1812, and in 1876.*

1812.

Bengal and Deccan	39	Mussulmen.. ..	258
Northern Circars	20	Hindus	155
Carnatic and Trichinopoly	731	Malabars	175
Madura and Dindigal ..	24	Pallars	304
Tanjore	49	Parayers	
Travancore and Tinnevelly	1	Half castes	
Malabar and Bombay ..	1		
Mysore	16		892
Mahratta	10		
Ceded Districts	1		
	892		

Carnatic ..	90.24 per cent.	Mussulmen ..	29.03 per cent.
Northern Circars	2.24 "	Hindus (Telingas)	17.37 "
		Malabar (Tamil)	19.62 "
		Lower Castes ..	34.00 "

1876.

Country.	Indian Officers.	N.C.O.s	Buglers.	Privates.	Caste.	Indian Officers.	N.C.O.s	Buglers.	Privates.
Hindustan ...	2	2	...	33	Indian Christians	...	3	4	37
Northern Circars ...	2	17	1	231	Mussulmen	...	9	34	183
Central Carnatic ...	6	20	3	143	Brahmins & Rajputs	...	1	4	16
Southern Carnatic ...	2	17	3	116	Mahrattas	...	1	...	10
Tanjore, Madura, Tinnevelly.	...	7	2	17	Telingas	...	2	24	241
Baramahal ...	...	...	...	...	Tamil	...	2	16	72
Ceded Districts ...	3	14	1	34	Other Castes	...	1	...	87
Mysore	1	4	1	23	Europeans	...	...	3	...
					Indo Britons	...	...	10	1
Total...	16	81	16	597	Total...	16	81	16	597

Carnatic ...	46.23 per cent.	Mussulmen ...	30.65 per cent.
Northern Circars	38.69 "	Telingas	40.36 "
		Tamil	12.06 "
		Other Castes...	6.19 "
		Christians	6.19 "
			12.38 }

Under S.G.O. No. 106 dated 11-10-1881, the standard and age of recruits for the Corps was fixed at—

Height not less than 5' 5".

Age between 16 and 25 years.

The height was temporarily reduced to 5' 4" for men of under 20 years of age by S.G.O. No. 45 of 24-7-1891; and in 1892 the chest measurement, which had been 32", was experimentally raised to 33" under G.O.C.C. No. 420 of August in that year.

The remainder of this appendix is taken from a report on—

"The characteristics of the different types of men enlisted in the Q. O. Sappers and Miners," written in 1907 by Captain E. K. Molesworth R.E., Adjutant of the Corps

General Remarks on Recruiting.

The danger of recruiting in the Madras Presidency is to take tall, smart, showy men; and it is these men who have been the cause of the rapid disappearance of the old Madras Regiments. These are the men who cough and get pneumonia the moment they are brought into a severe climate; they cannot stand cold, and can best be described by a vulgarism as "having no guts." The only points in their favour are their parade smartness and their intelligence, and neither of these is usually available when it is most wanted.

The short, sturdy, stumpy, ugly Madrassi is the man who will work and fight equally well, and will keep fit under conditions that would soon kill his smart and lanky brother.

Nor is this type by any means deficient in intelligence. A few simple questions put to the recruit are a good means of testing him in this respect, but the Recruiting Officer should be able to judge from a man's face and eyes whether he is likely to prove too dull and stupid. The Indian officers of this type are the most intelligent and reliable I know.

A most important point is weight.

In the 2nd Q. O. S. & M., no man should be accepted who weighs less than 120 lbs., unless it is obvious that owing to inferior food, etc., he is "below par" and will fill out. The continuous hard work required of a Sapper makes it absolutely essential that he should have a good reserve of weight; and if a man falls much below the 120 lbs. a bout of hard work and exposure will probably knock him up. For this reason a "weight book" is kept, showing, in the form of a chart, every recruit's weight on enlistment and every subsequent month until he joins the ranks. Along the line of weight is shown his employment, whether he is sick in hospital, etc. From this it can be seen at a glance how a man is getting on; and if the tell-tale line descends and refuses to rise, it must be considered whether his retention is advisable.

Before coming on to the question of "class," I have a few general remarks to make about recruiting. The surest means for finding out the best types is to observe the men very carefully on service, on the march, in camp, at their work, in hospital. Who frequent hospital most? Who fall out on the march? Who aim at doing the legal minimum of work? It will very seldom be found that the short, sturdy type falls into these categories. He is active and keen. It is the long, lanky man who collapses, pretty though he may look on parade.

The chief points to look at in a man proposed for enlistment are his feet, which should not be flat; his legs, which should be fairly straight and not knock-kneed; his fists, which should be large; his

chest, which should also be large, a narrow chested man being useless; his eyes, which are a fairly reliable index of his intelligence. Then having been measured and weighed, he should be sent to the Medical Officer to be thoroughly "vetted." If returned by him as sound, it is an excellent thing to give him a run of four or five hundred yards. I have known some refuse the running test with horror, and they have been promptly sent whence they came. Others have come in, or given up in such a condition as to make it clear that the 2nd Q. O. S. & M. will be better off without them.

Even the best Madrassi recruits fall away in the leg, and below the waist they compare very unfavourably with a Gurkha. They are not hill men, but on fairly level ground they are second to none in marching. Their calves may be thin, but they soon become as hard as iron; and, except on a steep mountain-side, the Sapper's lack of calf is no drawback.

Remarks on Caste.

There is a very wide field for recruiting for the 2nd Q. O. S. & M. "Madrassis, mixed, all classes," is the only limitation laid down.

In the 2nd Q. O. S. & M. practically no notice whatever is taken of caste. Within limits, the less caste a man has, the more likely is he to make a good Sapper. The Corps would be very much less efficient if caste prejudices were recognised; and I believe that to a great extent pride of Regiment takes the place of pride of caste. "*O si sicut omnes.*" The type of man, as indicated in the preceding pages, seems to me to be of far greater importance than his caste. The mistake, however, must not be made of enlisting men of castes who have no liking for a military life. There are some classes in Madras who are no more suitable for soldiers than that type of Englishman whose "*bête noir*" is what he calls "militarism," and whom nothing short of the sack of London by a foreign power could convert to sound views. There are also castes and sub-castes who are strict vegetarians, or who have other equally unmilitary prejudices, and are therefore unsuitable.

It is, therefore, necessary for the Recruiting Officer to know something about castes. He should at least have a working knowledge of the subject.

The question of caste in the Madras Presidency is very complicated and intricate. It is, however, quite possible to obtain a useful working knowledge, for the purposes of recruiting for the 2nd Q. O. S. & M., without any deep study.

The caste system of the Brahmans is a foreign importation in the South.

Before this, the Dravidians of Madras were divided into tribes. Then came the Brahmin from the North, and gradually converted the tribes into castes. It is clear, therefore, that no Dravidian has any valid claim to high caste.

The indiscriminate use of the word "caste" by Madrassis gives a clue to its history in the South. They use it to express tribe, class, caste proper, or trade, in a manner that the castes of Northern India would quite fail to understand. For our purposes, it is only necessary to know that as a rule caste means trade or occupation, such as blacksmith, dhoby, barber, chuckler, etc., but that the great agricultural class, from which our best Sappers are drawn, is divided into many castes.

This latter arrangement is only natural, as the class includes all grades of society from the wealthy zemindar to the cooly.

For all practical purposes, then, it may be taken that a suitable Hindu recruit will belong to one of the castes connected with land, such as Vellala or Agambadyan, or else to one of those which are merely names for occupations, such as chuckler.

Again, the South of India is divided into races, speaking different tongues, and each of these has its own caste names. Geographically, the main divisions are Tamil, Telugu, and Canarese, and they may be classified roughly as follows to provinces:—

TAMIL.—Chingleput, South Arcot, Trichinopoly, Tanjore, Madura, and Tinnevely.

TAMIL, and TELEGU.—North Arcot.

TAMIL, and CANARESE.—Salem, Coimbatore, Mysore, and the Nilgiris.

TAMIL, and MALAYALAM.—Travancore.

TELEGU.—Ganjam, Vizagapatam, Godaveri, Kistna, Guntur, Nellore, Kurnool, Bellary, and Kadapa.

TELEGU, and CANARESE.—Anantapur.

MALAYALAM.—South Canara, Malabar.

But the working classes naturally migrate to the centres of work, and know no geographical bounds. Kolar is a good example of this.

The following are the castes enlisted in the 2nd Q. O. S. & M.

The Canarese are altogether excluded, for though tough and hardy they appear to be a timid race, with no fighting spirit.

Only a small percentage of Telugus is taken. They are usually intelligent, fine looking men, but delicate. On the other hand my remark to the effect that within limits, the *man* is everything and the *caste* nothing, is borne out by the fact that a Subadar now in the Corps, mentally and physically one of the best I have known, is a Telugu. The five campaigns in which he has served with great credit, as well as the sound reliable work he has always done in peace, show that it would be a mistake to give up the Telugus altogether.

The best recruiting centre we have at present is the Vellore District in North Arcot. It is from here the coal black Tamil cultivator comes, and these men make the best all round Sappers. They correspond to the Yeomen of our own country, and in every nation the Yeomen make the best soldiers. In speaking of the Japanese Army, Sir Ian Hamilton says, "The peasant owner is a man; a proud, strong, independent man, who has a stake in his country. Those are the fellows we want as soldiers; the Yeoman who have been from the beginning of history and will be to its end, the very backbone of empires." There are great and fundamental differences between the British or Japanese Yeoman and his counterpart in India, but the Vellore cultivator is as near an approach to him as we can get in the South.

These, with Parayers and Indian Christians, should and do form the backbone of the Corps.

I now propose to take each of the classes and castes separately, giving their characteristics and qualities, and, as far as I can, a description of the tracts from which they come, and their conditions of life before enlistment.

Classes enlisted in the 2nd Q. O. S. & M.

Parayers form above a third of the 2nd Q. O. S. & M. The Tamil word "Parayer" is the original from which the English "Pariah" or outcast is derived, and is an unfortunate name for a class which contains a large proportion of intelligent, strong, hardworking men, who make excellent soldiers and sappers. Outcasts, or rather outcastes,

they certainly are from the Brahmin's point of view; but as they form the majority of the population and are its most useful members, there is no reason why any European should consider them as such.

The Abbé Dubois, in his "Hindu Manners and Customs," gives a heart-rending account of the Parayers, describing them as a dirty, drunken, abject crowd, with no sense of discipline and no proper pride. In the century that has elapsed since the Abbé wrote, however, the Parayers, owing to the efforts of good missionaries like himself, and to the general progress of civilization, have made great strides. I know no better Indian than the good Parayer Indian Officer, whom one considers an Indian gentleman, and who is as smart and clean as any Asiatic.

When a Parayer recruit first joins, he is apt to be less particular as to cleanliness than he might be; but a rigid course of bodily sanitation while he is a recruit, gradually impresses him with the advantages of cleanly habits, besides making him feel they are part of his military duty.

As to their former drunken habits complained of by the good Abbé, there must have been a great improvement in this respect since his days, for, in looking through the "crimes" for the past year, I find not a single case of drunkenness against any of the Parayers in the Corps.

Nor is it now possible to endorse the Abbé's remarks on their lack of discipline. They have no headmen in their villages, and seem to be a thoroughly independent class, caring for nobody and cared for by none, but there is no doubt that the British Officer has real authority over them, and under him they make the best disciplined soldiers of all. However, the Abbé describes them as he saw them and lived among them a century ago, before they had come under the wonderful influence of military discipline.

As to the tracts whence they come, their name is legion. They come from cultivating the soil in Arcot, from working on the railways, from gold-mining at Kolar, or from the rice-fields anywhere. They seem to have in them something of that spark of roving energy that is so seldom found in the native of India, but which is an invaluable military quality.

There is no general type of Parayer by which they can be described, and even a native cannot always tell a Parayer at sight, though he can find him out at once. Their dress is usually nondescript, and their hair short. I know of no other distinctive marks.

For recruiting purposes, it is only necessary to add that if a Parayer is up to the mark mentally and physically, and if his antecedents are found all correct, it is quite safe to enlist him. They seldom turn out failures, and naturally never have any caste prejudices.

In fighting spirit the Parayers are second to none of the other classes; and it is largely to them, as forming the bulk of the Corps that its excellent reputation for hard work and hard fighting is due.

Most of the foregoing remarks about Parayers apply equally to *Indian Christians*. The latter are usually better educated, and naturally gravitate more towards the large towns. Their close contact with western ideas has had the desirable effect of freeing them from un-military and anti-European prejudices, and has made them excellent subjects for a good military education. Like the Parayers they have no prejudices about what they eat and drink. The Christian Indian Officer is the best educated and most intelligent I know.

The war records of the Christian Indian Officers and ranks show that their fighting spirit is excellent, and they share the keenness of the rest of the Corps for active service and its chances of distinction.

The *Madrassi Mussulman* has a bad name, and the reason is not far to seek.

According to the census of 1901, there are two-and-a-half million Mohamedans in the Madras Presidency. Of these, one-and-a-half million are mixed breeds such as Moplahs, Labbais, and other converts to Islamism, and not genuine Mohamedans at all. Of the remaining million, under 900,000 of both sexes use Hindustani, the true Madrassi Mussulman's language, as their household tongue. Often a so-called Mohamedan presents himself for enlistment, who has a low class Hindu face; and it is these undesirable and obvious converts, who get the bad name for the Madrassi Mussulman. The low class Mohamedan too, as often as not, marries a Hindu woman, and the progeny of this mixture calls himself a Saiyyid, or a Sheikh, or a Pathan. These are as a rule useless also.

It is clear then, that of the two-and-a-half million, so-called Madrassi Mohamedans, only a small percentage, say 25 or 30, are genuine. On the other hand, some of the converts from good Hindu classes might be useful, if we could find them. More information is wanted on this subject, and at present none is to be had.

Great care must be taken, therefore, in enlisting Mohamedans.

The best come from Bellary, Hyderabad, Mysore, and Vellore.

In the Sappers they are mainly useful as Smiths, and Sapper Drivers, but we have some excellent all round Mohamedans, and it would be a mistake to exclude them altogether.

The true Mohamedan was originally a fighter, and his fighting spirit remains excellent still.

Agamudiyans, Vellalas, Vanneyars, Shanars, Kammalars, Shaniers, Edyers are among the Tamil castes.

So little do caste prejudices affect the 2nd Q. O. S. & M., that very often one man does not know the caste of another in his own company, and so little do the men themselves appear to know on the subject, that it is well nigh impossible to obtain any information from them. They are intensely proud of their Corps, but I have never heard of one who spoke of his caste with anything approaching the same pride.

I think that, provided a man belongs to one of the classes from which we now enlist, it matters very little which it is. The important point is that he should be in every way up to the standard, and should have no un-military prejudices.

I therefore propose to go rapidly through the remaining classes, giving only such information as I think would be of practical value to the Recruiter.

The *Tamils* are the descendants of the dark skinned Dravidians of the South. They have largely intermarried with various settlers, and only a few tribes can claim to be pure blooded Tamils.

The *Agamudiyans*, of whom there are about 300,000, are a dark-skinned class of cultivators and tradesmen, closely connected with the Kullars and Maravans mentioned hereafter.

They eat meat and drink anything. They come from the extreme South and are a plucky, fighting lot, and seem better educated, or at least are easier to educate, than their kindred castes.

Closely allied to them are the *Vellalas*, a great farmer class, of whom there are over two million. Some of them will not eat meat, and are consequently to be avoided, but as a rule they make good soldiers and Sappers. They also hail from the extreme South.

A similar class are the *Vanneyars*, a race of field labourers found in all the Tamil Districts. They have no awkward prejudices. As a race, having *dug* for generations, they are excellent at this important part of a Sapper's duty.

The *Shanars*, or toddy drawers, are very useful as Sappers. At climbing up spars, and at bridging work generally, they are unequalled. They come from wherever the date palm grows in the South. Their name, Shanar, merely indicates their occupation. They are a hard-working people, and seem originally to have been a fighting race, for the names of some of their sub-castes mean bowmen, foot soldiers, etc. and, on good authority, they were noted for their fidelity to those for whom they fought.

The *Kammalar* class includes the five artisan castes of gold-smith, brazier, smith, carpenter, and mason. They are useful as Sapper Artificers, and are among those who have a trade on joining. As one would expect, they come from no particular region, but are found wherever there is use for their manual skill.

Shaniers or weavers, from the Recruiter's point of view, may be treated as a branch of the Kummalars.

The *Edyers*, or shepherds, are not a Military caste, and it would be a mistake to enlist more than a very small percentage. They are stupid as a rule, but possibly would be found easier to train as guides and scouts than most other classes.

The *Telugu* is usually taller, smarter looking, and more polished than the Tamil; but he is delicate and excitable. Great care must be taken in enlisting Telugus, and the twelve-and-a-half per cent never exceeded. It may be taken as an axiom that only very exceptional Telugus are fit to be Sappers.

The Telugu comes from the region enclosed between Gangam, Bellary, Madras, and the Coromandel Coast.

The various caste names all indicate their professions, except where they are cultivators. None of these castes seem to have un-military prejudices.

The good and exceptional Telugu, when he is found, is a most valuable man. Four Indian Officers now in the Corps are Telugu, and all thoroughly useful ones; while as clerks, etc., the Telugus are excellent. There is nothing in the records of the Corps to show that in fighting spirit these picked Telugus are below the average; and were it not for their delicacy and excitable nature it would undoubtedly be advantageous to enlist more of them. As it is, the enlistment of Telugus is a danger, and the Recruiter must use great caution.

The "*other castes*," which represent only four per cent. of the Corps, are various classes which should not be excluded, as valuable Sappers may be obtained from them, but it would not be advisable to increase their proportion.

The *Wullooovers* are Parayer Priests, and as such have great influence with the Parayers. They are an intelligent class, and well educated, but are inclined to consider themselves as superior beings, deserving of special treatment. History has proved that a priest ridden army has serious drawbacks, and it is certain that priestly influence and military discipline are often antagonistic, while useful men can, therefore, be picked from this class, it would not be advisable to enlist more than a very small percentage of them.

The *Wadders* or *Oddes* are a class of tank diggers, stone quarriers, well-sinkers, and earth workers, and on account of their occupation are useful as Sappers. They are found in all parts of the Presidency, but appear originally to have been a Telugu caste, hailing as their name indicates, from Ohdra or modern Orissa. They have no caste prejudices, and are supposed to indulge a good deal in intoxicating liquors.

The *Chucklers* are a very low and thoroughly useful caste, whose occupation is leather work. A few of these men are absolutely necessary in a company of Sappers, as no one else can do their work. In the Sappers, they go by the name of saddlers. They have no caste prejudices whatever, and are a most useful class.

The *Kullars* or *Kallans* are closely akin to the Agamudayans already mentioned. Like them they are a dark-skinned aboriginal tribe found in the very South of the Peninsula. Their name means "theft," and they appear to have been a military race, who, their occupation as regular soldiers gone, "took to marauding, and made themselves so obnoxious by their thefts and robberies, that the term Kallan (thief) was applied, and has stuck to them as a tribal appellation."

The Kullars, owing to their independent character, have retained their Dravidian customs to a greater extent than almost any other tribe.

They have no un-military prejudices and are usually field labourers, unless employed in keeping up the reputation of their caste by thefts and robberies. They are an illiterate race, and their want of education and lack of the power to learn, stand in the way of their being generally enlisted.

A similar caste to this is the *Muravans*. They are also an aboriginal tribe coming from the same parts. They were once a fierce and turbulent race, famous for their military prowess. A century ago they gave the British much trouble, but have now settled into a peaceful though somewhat bold and lawless, agricultural class. They are fine, coal-black, big chested men, and quite free from un-military prejudices. Like the Kullars, the main objection to them is their total want of education and of ability to learn.

Nair recruits are of a sturdier build and lighter skin than the average. They are usually very smart and energetic. They hail from the Malabar Coast, and the class we enlist are usually cultivators from the Cannanore region. As they have caused "regrettable incidents" to British troops in days gone by, there is promise of good recruiting material among them.

The author of "Memoirs of Early Life and Service of a Field Officer" remarks: "As to the women of the Nair.....castes, I do not think that nature ever gave existence to forms of more perfect symmetry, or of greater delicacy of feature; however in complexion they may be of a deeper shade than their sisters in a more Northern latitude".

Such women ought to be the mothers of good recruits. The gallant Field Officer adds a remark about "their well-armed and jealous male attendants," which is also promising. They are a polyandrous race, but the men seem none the less manly on this account. Care should be taken in selecting Nairs, for the term has become a very wide one; and though they were originally a military caste, a large proportion of them now are quite unsuitable for soldiers. They are not particular about what they eat and drink.

I think we may safely increase our number of Nairs, but never to such an extent that Nair ideas and prejudices would influence the tone of the Corps.

The *Sembaravars* are a class of Tamil fishermen and boatmen who make useful Sappers at all water work.

Classes Enlisted in the 2nd "Q.O." Sappers and Miners.

Castes.	No.	Percent- age.	Occupation.
Parayers	625	50	
Christians			
Mohamedans			
<i>Tamil Castes :—</i>	150	12½	
Agamudayans or Agambadyans	270	21	Cultivators.
Vellalers			"
Vunneyars			"
Shanars			Toddy drawers.
Kammalars			Artisans.
Shaniers			Weavers.
Edyers			Shepherds.
Gowdah			
<i>Telugu Castes :—</i>	150	12½	Weavers.
Shalivars			Toddy drawers.
Edigawars			Cultivators.
Kavaries or Cowrahs			"
Balgivars			"
Elamawars			"
Capoowars			"
Malawars			Parayers.
Sadur Bogis			Dhandy bearers.
Mathegawars			Leather workers.
Commarawars			Smiths.
Chackalawars			Dhobies.
Reddies			Cultivators.
Sadarnaikers			Mountebanks
Salawars			Potters.
Gentus			Cultivators.
Ratchawurs			Kshatriyas.
Gowdah			
<i>Other Castes :—</i>	50	4	Parayer priests.
Wulloovar			Cultivators.
Sadiachee			"
Mootras			" and fishermen
Pullars			Tank " builders, stone
Waddars or Oddes			cutters, well sinkers, etc.
Chucklers			Leather workers.
Naviders			Barbers.
Vaniers			Oil pressers.
Cosawars			Potters.
Wunnars			Dhobies.
Kullars			Cultivators and robbers.
Marawars			Cultivators.
Nairs			"
Kurumbas			Goat breeders.
Rajas			Kshatriyas.
Sembadawars			Fishermen.

APPENDIX I.

The tests laid down from time to time to pass in trades are as follows:—

Carpenters.—A carpenter is qualified for “Second Class” working pay when he can saw, adze, plane, make common batten doors and windows, line out his work, repair wheel-barrows, helve and handle the tools used by the Corps, dove-tail roughly, and make rough couples. He should be able to keep his tools in order, and turn on the lathe a plain cylinder. 1876.

A “First Class” carpenter should be able to make wheel-barrows helve and handle all kinds of tools, make ordinary tables and chairs, and doors and windows of every description, and roofs under the superintendence of a foreman. He must also be able to sharpen his own saw and keep his tools in order, and should be able to turn ornamental legs for tables and chairs.

Sawyers.—A set of sawyers are entitled to “Second Class” working pay when they can cut in a day 35 superficial feet of jungle wood or 45 feet of teak wood, mean girth of log not to be less than 5 feet. Each man should be able to sharpen and set his own saw.

They are qualified for “First Class” working pay when they can cut 45 superficial feet of jungle wood, or 55 feet of teak wood, mean girth the same as for “Second Class”; and line out their work in any kind of timber. They should be able to cut planks of all thicknesses.

Thatchers.—A “Second Class” man, with three assistants, using Lunka grass, can thatch one square daily, as follows: one assistant tying bundles and cutting the ends off the grass, one carrying the grass to the thatcher and throwing it on the roof, and one assisting the thatcher.

A “First Class” man, in addition to the above, should be able to ridge and valley (no task for ridging); he can thatch one-and-a-half squares daily.

N.B.—Where there are several thatchers at work fewer assistants are required on the roof, but they are wanted to bring water, split bamboos, nar, &c.

Basket Makers.—A “Second Class” basket maker can make four bamboo or six rattan baskets daily, make common bamboo tatties, and put a seat to a chair.

A “First Class” man can make six bamboo or eight rattan baskets daily, and can also make common or Khaskhas tatties, also all kinds of cane work.

Smiths—A smith becomes eligible for “Second Class” working pay when he can repair iron and steel tools and wheel-barrows, and forge all sorts of nails and hinges; he should be able to weld and steel jumpers.

A “First Class” man should be able to forge pick-axes, all the iron work of wheel-barrows, and all kinds of hinges and nails, make locks and keys and use the lathe, and he should be well acquainted with all kinds of welding and steeling tools and filing.

Brick Makers.—(Gang of 7 men).—No. I, the moulder; No. II, the off-bearer, who removes the bricks from the bench to the hack; No. III brings the clay to the bench and places it on the right side of No. IV, who supplies the moulder with sufficient clay (roughly

1876. formed) to make one brick; No. V receives the bricks from No. II, turns and lays them on the hacks to dry; Nos. VI and VII temper clay, and bring water.

A man becomes entitled to "Second Class" working pay when he can mould 1,200 bricks or 500 flat or pan tiles in $7\frac{1}{2}$ hours, all materials being previously prepared. A "Second Class" man should be able to make common plain flower pots on the English wheel, or on the Indian wheel if preferred.

A "First Class" man should be able to mould 1,500 bricks or 800 flat or pan tiles in $7\frac{1}{2}$ hours, materials as per "Second Class," he must also be able to judge the proper description of clay for making bricks and tiles, and know how to stack the bricks in the kiln and burn them. He should also be able to make goglets and two-gallon water chatties. Brick, Tile, and Pot Makers to be one trade.

Bricklayers.—A "Second Class" bricklayer should be able to lay 100 cubic feet of stone in mud, 80 cubic feet in chunam, or two cubic yards of brick-work; he should have three assistants till the wall is five feet high, and one additional assistant for every scaffolding; he should be able, with three assistants, to plaster two squares in mud or one-and-a-half in chunam, and turn any circular or segmental arches.

A "First Class" bricklayer should, in addition to the above, be able to execute the following tasks in a day :—

Flat archwork over doors and windows; 17 cubic feet with two assistants.

Circular archwork in bridges.—One cubic yard with three assistants, moulded bricks being furnished.

Flooring.—The task must be regulated by the description of the materials used, to be deferred until data be available.

Cornice work.—Two men with four assistants, 36 ft. by 9 in. by 9 in.

Columns.—One man with three assistants, 6 ft. high.

Terracing.—12 men with 35 assistants can complete one square daily.

Pan Tiling.—One man and one assistant, one square, if the tiles are placed on the roof.

Flat and pan tiling.—Two men and four assistants, one square.

Plastering.—One man and three assistants can plaster three squares of mud, or two squares of chunam daily, (one coat); he should also be able to point in cement.

N.B.—Five men can pound 21 parabs of mortar daily, *i.e.*, 14 parabs of sand and seven of lime—a parah to be 20 in. by 10 in.

Stone Cutters.—A "Second Class" Cutter should be able to cut five, and a "First Class" man eight, superficial feet per diem in hard granite, such as is found in Bangalore, roughly dressed; proportional for other kinds of stone and dressing.

A "First Class" man should be able to mark out his own work.

Boring and Blasting.—Two "Second Class" men, with a $1\frac{1}{2}$ in. jumper, should be able to bore $2\frac{1}{2}$ ft. daily in granite such as is found in Bangalore. A "Second Class" man should also know how to tamp a hole.

A "First Class" man, in addition to the above, should be able to fire blasts properly and determine where blast-holes should be placed so as to obtain the most advantageous result, and also know the charge to be used in blasting.

Tin Smiths.—A "Second Class" man should be able to make canisters, common tin watering pots, and lanterns, and have some knowledge of wire work. 1876.

A "First Class" man should be able to execute work of any description in tin or zinc, and be able also to solder in copper or brass, and execute wire work.

Coopers.—A "Second Class" man should be able to head and bottom casks, and to renew staves, and repair hoops.

A "First Class" man should be able to make all kinds of casks and buckets, and new hoops.

Surveying.—On entering the Survey School the Sapper will pass an examination in the four Simple rules of Arithmetic, and in writing English letters and figures.

Course for 90 days.

He will then study the Simple and Compound rules of Arithmetic, including vulgar and decimal fractions, and pass a satisfactory examination in them within 90 days;—or failing to do this will be removed to other work.

Course of study for 1st Grade.

He will then go through a course of drawing, printing, and colouring, until he can produce a satisfactory copy of the following Standard Plates:—

- I. Printing Plate.
- II. Conventional Signs, with the Standard tints of the same.
- III. Standard Scales.

He will then study Chain Survey and Mensuration of Areas, will learn to trace Batteries and Magazines; and will practise the pacing of distances.

Tests for 1st Grade.

- (1) To execute a Chain Survey* correctly† and unassisted,‡ and to plot and calculate the area of the same. One day's out door work
- (2) To pass an examination in Mensuration of Areas.
- (3) To trace Elevated, Sunken, or half Sunken Batteries with the Rectangular Magazine.
- (4) To pace distances with tolerable accuracy, and to make a scale§ of his own paces.

Course of study for 2nd Grade.

He will then study Surveying with the Prismatic Compass and Chain, and the use and adjustments of Y and Dumpy Levels; will draw the Architectural Course (14 plates), will learn Mensuration of solids, and the use of the Plane Table, and will practise the Measurement of simple heights and distances without instruments.

Tests for 2nd Grade.

- (1) To execute a Prismatic Compass and Chain Survey, correctly and unassisted,|| and to plot the same. One day's out door work.

* Scale 50 to 1" (about).

† (Greatest admissible error to be 1' in 100'.)

‡ (Except by three labour men to carry the chain, &c.)

§ 6" to 1 mile, showing paces—stating how many paces are equivalent to 100 yards.

|| (Except by four labour men.)

1876. (2) To run a line of levels in the above survey. One day's out door work; and to show fair practical knowledge of the adjustments of the Y and Dumpy levels.
- (3) To draw the architectural course of 14 plates.
- (4) To pass an examination in Mensuration of Solids.
- (5) To make a rough survey with the Plane Table.—One day's out door work.
- (6) To measure simple heights and distances roughly, without the use of instruments; and to pace yards accurately.

Course of study for 3rd Grade.

He will then study Trigonometrical Surveying, and traversing with the theodolite, and learn the adjustments of that instrument; and will also practise filling in the details of a Survey with the plane table, or prismatic compass.

He will learn to use logarithms in the calculations necessary for the above triangulation.

He will make drawings and estimates from specifications.

He will practise simple contouring in the field.

He will learn to lay off simple curves with the theodolite.

He will learn to calculate the Area of a piece of ground by the Traverse Table, and to reduce Areas on paper.

He will learn how to find the Meridian, and Variation of the Compass roughly.

Tests for 3rd Grade.

To execute a trigonometrical survey correctly and unassisted with the theodolite, and to show a practical knowledge of the adjustments of that instrument. A fair plan of the survey and a diagram of triangulation is to be made, the roads to be traversed with the theodolite, and details filled in with the Plane Table or Prismatic Compass.—Extent of survey to be about 3 square miles.

(2) To make the Logarithmic calculations necessary for the above triangulation.

(3) To draw a plan from specification, and to estimate the same.

(4) To make and contour in the field a rough plan of a piece of ground.

(5) To lay off a simple curve with the theodolite.

(6) To calculate the Area of a piece of ground by the Traverse Table, to reduce on paper an irregular Area to a mensurable form.

(7) To find roughly the Meridian, and the Variation of the Compass at the station.

Text Books.

The following are the text books, &c., for reference and instruction, in use in the Survey School, Q. O. S. & M.

1. Rurki Papers No. VII, on Surveying (Third Edition).
2. Instruction in Military Engineering, S. M. E. Chatham.
3. Arithmetic, by Bradshaw.
4. Mensuration, Survey School, Q. O. S. & M.
5. Adjustments of levels, Survey School. Q. O. S. & M.
6. Standard plates, &c. (*vide* accompanying list.)
7. Logarithm Tables (Hutton's.)
8. Madras Civil Engineering College Paper No. IX, on Estimating.

These works are to be used as follows:—

For Arithmetic.—Arithmetic by Bradshaw.

Drawing, Printing and Colouring.—Rurki papers on Surveying, 1876.
ch. I, and Standard Plates.*

For 1st Grade:—

1st Grade text books and books of reference.

- (1) Chain Survey.—R. P. S. ch. II, and ch. X, Prob. 1 to 6.
- (2) Mensuration of Areas.—“Mensuration” Q. O. S. & M.
- (3) Tracing Batteries.—Instruction in Military Engineering, Plate XXI, with Sections 11 to 13; and Plate XXVIII, with Section 19.

2nd Grade text books and books, &c. of reference.

- (1) Prismatic Compass Survey.—R. P. S. ch. III.
- (2) Use and Adjustments of Levels.—R. P. S. ch. XII. pp. 183 to 190, 192, and 195 to 205; and “Adjustment of Levels,” Q. O. S. & M.
- (3) Architectural Course.—Standard plates.*
- (4) Mensuration of Solids.—“Mensuration” Q. O. S. & M.
- (5) Use of Plane Table.—R. P. S. ch. VII, pp. 114 to 119.
- (6) Measurement of Heights and Distances.—R. P. S. ch. X, Prob. 7 to 12.

3rd Grade text books and books, &c. of reference.

- (1) Trigonometrical Survey with the theodolite.—R. P. S. ch. IV, and ch. VI.
- (2) Logarithmic calculations of the above.—R. P. S. ch. VI, and Logarithm Tables (Hutton's).
- (3) Specification and estimating.—Standard Plates* &c., and Madras C. E. College Paper No. IX.
- (4) Contouring.—R. P. S. &c.
- (5) Laying off curves.—R. P. S. p. 16, and Instruction in Military Engineering, pp. 307 and 308.
- (6) Areas by Traverse Table, and reduction of Areas.—R. P. S. ch. V, and ch. X, Prob. 13 to 20; and Logarithm Tables (Hutton's)
- (7) Meridian, and Variation of Compass.—R. P. S. pp. 228, 229.

***Standard Plates, &c.**

I. STANDARD SCALES:—

1. General Survey—6 inches to 1 mile.
2. Details of Survey—12 “ ”
3. General Plans of Buildings—100 feet to 1 inch.
4. Working Plans of Buildings—10 “ ”
5. Details of Buildings—5 “ ”

II. CONVENTIONAL SIGNS of Jungle, Roads, Canals, Paddy fields, &c., &c., with Standard Tints for the same.

III. PRINTING PLATE giving standard sizes of:—

Upright Block characters,		$\frac{1''}{6}$
Slanting Block	do.	$\frac{7''}{60}$
Italics	...	$\frac{7''}{60}$ & $\frac{4''}{60}$
Figures	...	$\frac{7''}{60}$

1876.

IV. SPECIFICATIONS :—

Public Bungalow ; in English and Tamil.
 Bridge of Three Arches ; in English.

V. ARCHITECTURAL DRAWINGS :—

1. Brick Moulding, bench, mould, and hack.
2. Brick Kiln as used at Head-Quarters.
3. Brick Work, different bonds, &c.
4. Brick Maker's hack barrow.
5. Traveller's Bungalow.
6. Open Shed.
7. Terraced roof, Guard room.
8. Details of Terraced Roof.
9. Section of Terraced Roof.
10. Solitary Cell.
11. Bridge of three arches.
12. Aqueduct.
13. Head Sluice.
14. Battery (for 4 guns)*

Chucklers.—A "Second Class" man should be able to make chupples, repair and alter accoutrements neatly, and make a kit bag and shields for tools.

A "First Class" man should be able to make a pair of ammunition boots from measurement in two days, to cut out and sew all kinds of work in leather, and make girths in gut or leather ; he should also be able to choose leather.

Photography.—A "Second Class" man to be able to clean plates ready for use, to coat a plate, and take a negative, and develop and fix the same.

A "First Class" man, in addition to the above, to be able to prepare the negative and sensitizing baths, and prepare paper for printing, also to take any sort of negative from life, or nature, or from copies, and to rectify any baths that may get out of order.

Field Works.—A man should be eligible for "Second Class" pay when passed by the Field Work Instructor as able to execute neatly and quickly all the various subjects appertaining to Field Works as laid down in the work of instruction in Military Engineering, and forming the course of annual instruction. The task is not to include battery tracing. Road making is to be included in the course of Field Work.

Telegraphy.†

				Words per minute.
First Class man to receive	...	...	...	12
First Class man to send	...	...	...	16

Flag, Lamp, and Heliostat Signalling.

				Letters per minute.
Reading and writing a message from a small flag at a short distance	...	...	...	15
Reading a Cipher message from a small flag through a telescope.	...	...	...	16
Reading a message from a small flag through a telescope				20

*Half sunken, 2 guns and 2 howitzers and 2 mortars.

†This subject being under revision the section is incomplete.

	Letters per minute.	1876.
Reading a message from a small flag at a short distance	25	
Reading and writing a message from a Heliostat	... 15	
Reading a Cipher message from a Heliostat	... 16	
Reading a message from Heliostat	... 20	
Reading and writing a message from a Lamp	... 15	
Reading a Cipher message from a Lamp	... 16	
Reading a message from a Lamp	... 20	
<hr/>		
Signalling legibly with a small flag	... 25	
Signalling legibly with a large flag	... 20	
Signalling legibly with a Heliostat	... 20	
Signalling legibly with a Lamp	... 20	

Printing and Composing.—On entering the school to learn Printing and Composing, the Sapper should show that he has acquired a sufficient knowledge of English.

When he has attained some proficiency in his trade he will be put through the following tests to ascertain his fitness for promotion to 2nd Class of working pay:—

Tests for 2nd Class.

- (1) To tell the names of the different kinds of type used in the press, and the places of the letters in the type cases.
- (2) To show that he can place the type in the chase, ink, and print, and clean the type when required.
- (3) To print 150 *single copies* in one hour, without mistake.
- (4) To show a fair knowledge of English reading and spelling.

Tests for 1st Class.

- (1) To execute the work laid down for a 2nd Class man in a smart manner.
- (2) To compose an ordinary piece of work accurately, and to punctuate and arrange his work with uniformity.
- (3) To show that he is able to correct any faults in the working of the press, and that he can make a roller.
- (4) To print 180 *single copies* in one hour, without mistake.
- (5) To show that he is well acquainted with English reading, writing, and spelling.

Lithography.—Before entering the school to learn Lithography the Sapper should (as a general rule) have passed the examination for 2nd Grade in the Survey School, and be able to show satisfactory specimens of his drawing and printing by hand.

He should also shew a sufficient knowledge of English.

He will be required to pass the following tests of proficiency in his trade before promotion to the 2nd class of working pay:—

Tests for 2nd Class.

- (1) To transfer an ordinary plan or drawing from prepared paper to the stone, and ink and print the same.
If properly transferred a plan should furnish 500 copies.
- (2) To show that he is able to prepare a stone for work, and clean it when no longer required.

1876. (3) To prepare ink for use.
 (4) To print at the large press 30 copies an hour of a large plan or form, without mistake.
 (5) To copy the Survey School Printing Plate by hand (on ordinary paper) neatly and correctly.

Tests for 1st Class.

- (1) To perform in a superior manner the work laid down for a 2nd Class man.
 (2) To prepare transfer paper, and to copy thereon any plan or design given him.
 (3) To show that he is able to correct any faults in the working of the press.
 (4) To strike off 40 copies an hour at the large press of well finished work.
 (5) To print by hand in any of the usual types, in an unexceptionable manner.

Book Binding.—The following are the tests which the Sapper will be required to pass before becoming entitled to 2nd Class working pay :—

Tests for 2nd Class.

- (1) To show that he understands the use of the cutting and of the sewing press.
 (2) To engrain the edges of a book, and ornament with a hot die.
 (3) To bind an octavo book (about 1" thick) in one day, in a rough but neat style, and to place the pages properly in order before doing so; binding materials having been prepared beforehand.

Tests for 1st Class.

- (1) To execute with superior finish the work laid down for a 2nd Class man.
 (2) To make the front edges of a book concave.
 (3) To gild and ornament a book in a plain style, and to work on headbands.
 (4) To bind an octavo book (about 1" thick) in one day, in a superior style, and to correct any error in the arrangement of the pages.

Photography.

2nd rate—

1888. To be able to unpack and set up the camera, choose proper lens with reasons, take a landscape view with dry plate, develop, print, and fix it.

1st rate—

In addition to the above, to have a good knowledge of copying, enlarging, sensitizing paper, toning prints, and retouching negatives, and to know the principles of the wet plate process.

"B" rate—

Explain action of light on silver compounds, the object of development and intensification. Wet plate process, select suitable glass, clean it, prepare plate, and take picture or copy. Dry plate process, prepare and coat $\frac{1}{2}$ plate with gelatine emulsion; take portrait, land-

scape group, and train in motion. Lenses, know varieties, and their uses, test and bind equivalent focus. Make up developers and intensifiers, understand how to deal with Filling Fog Flatness or Density of Image Spots, prepare sensitized paper, print, make up toning bath, tone, and fix without any spots, etc., spotting and mask negative. Copy plans or pictures, enlarge on paper. Know something of Blue Printing process, mount prints, remove varnish from negative, provide substitutes for ground glass. Know table of weights and measures. Be able to test strength of Negative Bath, and Paper Bath, recover silver and gold from waste solutions, and paper cuttings. 1888.

Lithography.

1st rate.

To be able to copy an ordinary survey map on transfer paper, with Egyptian, Roman, and Italic lettering, and stump writing. Also to be able to do work direct on stone or zinc (that is backwards), so as to make any correction necessary after the work is on stone. To be able to superintend work at the press.

Clerk.

2nd rate.

To have 2nd class school certificate.

Arithmetic—Simple problems in compound rules, vulgar fractions, and calculation of wages. 1892.

Dictation—100 separate words of ordinary English, more than 4 mistakes to disqualify.

Writing—To copy out in a good legible hand about 12 lines from C.S.O. within $\frac{1}{2}$ an hour.

Returns—To know how to fill up the following returns, Applications for Pension and Discharge. Daily report.

Diary—Fair knowledge of how to keep up a diary of letters received and despatched.

1st rate.

Dictation—200 words from A.R.I. Vol. II., 5 mistakes to disqualify.

Writing—To copy out in a good legible hand, 25 lines of A.R.I. in $\frac{1}{2}$ hour.

Arithmetic—Decimal fractions, simple rule of three, simple interest, and use of exchange tables for converting English into Indian money, and *vice versa*.

Reading—A.R.I. Vol. II., to be fluent, with fairly correctly pronunciation.

Official letters—To draft a reply to any ordinary official letter of not more than 20 words, exclusive of introductory sentences etc.

(a) From verbal instructions.

(b) From a written precis.

Translation—To translate into vernacular an ordinary official letter, or a section of A.R.I. Vol. II.

Returns—To know all ordinary company returns, and be able to make out family certificates.

Brickmaker.

A "Second rate" Brickmaker may qualify to receive "First rate" working pay when he can mould 1,500 bricks or 700 flat or pan-tiles in $7\frac{1}{2}$ hours, materials being previously prepared. He must also be able to judge the proper description of clay for making bricks and tiles, know how to stack bricks and burn them, and know when bricks and tiles are properly burnt. He must also pass as a second rate Brick-layer. 1894.

1901.

Telegraphy.

The test for telegraph signallers was revised in August 1901 as follows:—

For 2nd rate.

1. Handwriting—Should be distinct and readable, and not too slowly written.
2. Signalling—Sending and receiving 12 words a minute.

For 1st rate.

1. Dictation—An easy passage of at least 200 words, more than 8 mistakes to disqualify. Holders of a 2nd class education certificate are exempt.
2. Signalling—Sending and receiving 16 words a minute.
3. A thorough knowledge of batteries, rough testing, and office connections according to the detail laid down in the Telegraph School note book, and also of the G.T.D. Traffic Code.

FOR BRITISH NON-COMMISSIONED OFFICERS ONLY.*For "B" Superior rate.*

As for 1st rate, but be able to send and receive 20 words a minute.

For "A", Very Superior rate.

As for "B" rate, but able to send and receive 24 words a minute. In addition must have qualified as a 1st rate lineman.

Printers.*2nd rate—*

1904. To compose at the rate of 500 stamps from re-print, and 400 from good manuscript copy per hour, including correction of proof. Measure—22 cms. Type—Long Primer or Small Pica.

He should compose for at least one hour, and distribute the same in one-third the time laid down for composing. Errors not to exceed 14 in every 1,000 letters composed.

Compose a foolscap quarto form from re-print, and make ready for press.

1st rate—

To compose at the rate of 800 stamps from re-print, and 700 from manuscript copy per hour, including correction of proof. Measure, distribution, and type as for 2nd rate. Errors not to exceed 12 in every 1,000 letters composed.

Should have some knowledge of simple jobbing work, prepare a job on press, and print 100 copies in one hour.

He should also be able to name the different sizes and styles of types, and be able to take the Field Equipment Press to pieces and put it together.

"C" rate—

To compose at the rate of 1,000 stamps from re-print, and 900 from manuscript copy per hour, including correction of proof. Measure, distribution, and type as before. Errors not to exceed 10 in every 1,000 letters composed.

Making up and imposing 16 pages.

Should have fair knowledge of jobbing and table work, and should be able to print 150 copies in one hour.

1904.

"B" rate—

To compose at the rate of 1,100 stamps from re-print, and 1,000 from manuscript copy per hour, including correction of proof. Measure, distribution, and type as before. Errors not to exceed 8 in every 1,000 letters composed.

Making up and imposing 24 pages.

Should have a good knowledge of jobbing and table work.

"A" rate—

To compose at the rate of 1,200 stamps from re-print, and 1,100 from manuscript copy per hour, including correction of proof. Measure, distribution, and type as before. Errors not to exceed 6 in every 1,000 letters composed.

Making up and imposing 32 pages.

Should have a "superior" knowledge of jobbing, table work, equations, display of a title page or hand bill, also composing in the local vernacular character.

Bookbinders.*2nd rate—*

Thorough knowledge of sewing books, both periodicals and account. He must be able to make 50 service envelopes (small size) in one hour.

He must be able to bind a quarto volume in half leather, or full calico, in one day, materials being already prepared.

1st rate—

In addition to above, he must be able to bind a quarto volume in full leather, with headbands in one day, materials being already prepared.

Photographers.*2nd rate—*

"2nd rate" man should be able to take landscapes or inanimate objects on dry plates ($8\frac{1}{2}$ " by $6\frac{1}{2}$ "), develop and print the same on P.O.P., tone, and fix.

He should be able to make up his own developer for the above.

1st rate—

A "1st rate" man should be able to take photographs, as above, up to 12" by 10", develop the negative, and take prints from same in silver (P.O.P., or albumenised paper), and be able to tone, fix, and wash them, preparing his own chemicals for the processes.

"C" rate—

A "C" rate man, in addition to above, should be able to take photographs of interiors and groups; he should be able to copy, enlarge, or reduce, to spot negatives, to print on Bromide paper, and to mount prints neatly.

"B" rate—

A "B" rate man, in addition to the above, should be able to enlarge from suitable negatives, up to 12" by 15", and should be able to superintend and give instruction in the various processes of preparing negatives, solutions, and in printing etc.

"A" rate—

An "A" rate man, in addition to the above, should be able to prepare a transfer of a plan or map for Litho work, and should know exactly what kind of negative is required for such work.

1904.

Lithographers.*2nd rate—*

- To prepare stones and zinc plates.
- To print 20 copies, half sheet foolscap, per hour, in black, from stone, keeping the work clean.
- To print and finish blue prints.
- To take the Field Equipment press to pieces, and fix it up again.

1st rate—

- To make a fair tracing of a plan on tracing transfer paper.
- To prepare paper for blue prints, and print and finish blue prints from the same.
- To print 25 copies per hour, in black, half sheet foolscap size.

"C" rate—

To be able to transfer ordinary transfers to stone or zinc, and to prepare the same for printing.

To be able to prepare gall, gum, and other solutions required for zinc and stone work.

To be able to make a good tracing of a plan, or simple map, on transfer paper.

To print 30 copies foolscap size, per hour, in black, and 15 copies in colour, from stone, and 15 copies per hour from zinc.

"B" rate—

In addition to doing the above in "superior" style, to print 35 copies foolscap size, per hour, from stone.

To be able to make corrections after the work is on the stone.

To be able to superimpose accurately work in three colours.

To prepare gelatinized paper and make a transfer by mean of a photo negative, and transfer the same to zinc or stone.

"A" rate—

In addition to doing the above in "very superior" style, to be able to impart instruction in all the above enumerated processes.

Telegraphists "Operators."—*2nd rate—*

1. Sending and receiving (Morse key and sounder) at the rate of 12 word per minute.
(Tests messages to consist of groups of letters, 95 per cent. to be read correctly).
2. Sending and receiving with lamp, flag, or semaphore, at the rate of 6 words per minute.
3. Making up and maintaining batteries of Minotto and Field Service Leclanche cells.
4. Fair knowledge of office connections.
5. Fair knowledge of jointing wire and cable.
6. Fair knowledge of the test and correction of faults.
7. Writing and spelling—To write an easy passage of 100 words with less than 5 mistake.

1st rate—

1. As for 2nd rate, but at the rate of 18 words per minute.
2. As for 2nd rate, but at the rate of 8 words per minute.

3. }
 4. }
 5. }
 6. }
- As for 2nd rate, but thorough knowledge required.

1904.

7. Writing and spelling—To write an easy passage of 200 words with less than 5 mistakes.

"C" rate—

1. In addition to above, to send and receive at the rate of 22 words per minute.
2. To send and receive at the rate of 12 words per minute on closed circuit.
3. To erect and maintain telephone connections.

Telegraphists—"Linemen."

2nd rate—

1. Making up and cleaning Minotto and Field Service Leclanche batteries.
 2. Jointing Britannia and twist joints.
 3. Jointing covered cables.
 4. Binding to insulators
 5. Fitting posts, sockets, and sole plates.
 6. Making stays, fitting brackets etc.
 7. Straining wire.
- Names and use of all tools.

} With light and heavy
aerial line.

1st rate—

In addition to the above:—

1. Erecting posts, running wires, transferring wires, terminating at end of line, and for rail crossings. Cutting in and levelling wires.
2. Tests for faults roughly (Lineman's tests), making good faults, and generally keeping a line in good working order.
3. Running out and taking in covered cable.

"C" rate—

1. Taking charge of a linemen working party.
2. Marking out a line in an easy country.
3. Tapping wires, changing the alignment of a line.
4. Erecting and maintaining a telephone installation.

Clerks.

2nd rate—

To copy a letter in English or Vernacular, quickly and correctly.
To do any copying correctly.
To keep the "necessaries" or similar account.
To understand the registering of letters, and how to keep the postage account. To have a 3rd Class School Certificate.

1st rate—

To be able to keep the accounts of a company of Sappers and Miners correctly.
To know how to keep the Regimental Equipment Ledger, and make out correctly all necessary vouchers connected with this ledger.
To understand the ammunition account.
To be able to keep up a letter book properly, and to enter a concise precis of a letter. To have a 2nd Class School Certificate.

1904.

Surveyors.*2nd rate—*

A second rate man should have a good knowledge of scales and be able to trace neatly.

1st rate—

A first rate man should be able to execute a plane table sketch and put form lines on it; to execute a chain survey and plot the same on a scale of 50' to 1". He should be able to reduce, enlarge, and copy plans neatly.

"C" rate—

A "C" rate man, in addition to the above, should be able to run a line of levels, and adjust a Y or Dumpy level; he should be able to make a prismatic compass sketch.

"B" rate—

A "B" rate man, in addition to the above, should know mensuration of areas, and be a superior draughtsman.

"A" rate—

An "A" rate man, in addition to the above, should be able to adjust a Theodolite, and make simple triangulation surveys therewith.

Bricklayers and Masons.*2nd rate—*

A Bricklayer should be able to lay in $7\frac{1}{2}$ hours, in fair work, 250 bricks; to turn common arches; to understand bonding; to point with weather or flat joint, to pave with brick on edge or flat; to mix mortar; to build dry stone retaining walls.

A Mason should have some knowledge of the above, and should be able to build uncoursed rubble walling; to hammer dress quoins; to understand bonding, and to mix mortar.

1st rate—

A Bricklayer should be able to lay in $7\frac{1}{2}$ hours 1 cubic yard brick work; lay out and turn any circular arch; mix his own mortar; build uncoursed rubble walling fairly.

A Mason should be able lay bricks as for 2nd rate bricklayer.

To build in coursed and random rubble.

To build 20 c.f. uncoursed rubble in 8 hours, preparing his own stone.

To lay stone flooring.

"C" rate—

A Bricklayer should be able to lay $1\frac{1}{2}$ cubic yards brick work in $7\frac{1}{2}$ hours.

Break out one wall from another.

Execute flat arch work over doors and windows, laying out his own work and rubbing his own bricks.

Lay brick floors.

Lay tiles.

Plaster.

Point in cement.

Make concrete.

A Mason should be able to build in rubble and ashlar, and must be a 2nd rate Bricklayer.

Make concrete.

Cut and dress quoins.

"B" rate—

A Bricklayer should be able to set out a small building from a plan after receiving detailed instructions, and supervise erection of the same.

To supervise steining a well.

Execute all "C" rate tests in a superior manner.

To have a fair knowledge of how masons' work is executed.

A Mason should be able to lay out a small building from a plan, after receiving detailed instructions, and supervise erection of the same.

Lay out and cut stones for any arch.

Lay out and cut plain cap for column.

Build in rubble and ashlar in a superior manner.

Build any arch in stone.

Make and build in concrete.

Have a fair knowledge of how bricklayers' work is executed.

"A" rate—

A Bricklayer should be able to :—

Cut and set a gothic arch.

Cut and set an elliptical arch.

Build a skew culvert.

Cut and set a skew quoin.

Read a drawing.

Impart instruction to others.

Supervise excavation and steining a well.

Supervise masons.

A Mason should be able to cut and dress moulded cap for column ; work a moulded corbel.

Build in rubble and ashlar in a very superior manner.

Set out work for stone cutters.

Impart instruction to others.

Supervise bricklayers.

Stone Cutters.*2nd rate—*

Should be able to rough dress 5 superficial feet of hard stone (*e.g.* granite) in $7\frac{1}{2}$ hours, the work to be executed with tools pointed by himself. He should be able to square a stone with fair accuracy.

1st rate—

To dress roughly 5 superficial feet of hard stone (*e.g.* granite) in 5 hours, and bore 2 feet of hard stone (*e.g.* granite) with $1\frac{1}{2}$ " jumper and one assistant, in 6 hours.

He must be able to mark out his own work.

Brick and Tilemakers.*2nd rate—*

Should be able to :—

Mould 600 bricks in $7\frac{1}{2}$ hours.

Mould tiles of the local type at a fair rate of speed. All materials having been previously prepared.

1st rate—

Should be able to :—

Mould 1,000 bricks in $7\frac{1}{2}$ hours.

Mould tiles of local type at a superior rate of speed. All materials having been prepared.

To judge the proper description of clay for making bricks and tiles.

1904. Stack bricks in a kiln.
Burn bricks in a kiln.

"C" rate—

A first rate man may be advanced to "C" rate if able to superintend loading and firing of kilns, and able to qualify as second rate bricklayer.

Smiths and Fitters.

2nd rate—

Must learn the care, English names, and use of tools; tap and screw to $\frac{1}{2}$ " thread, read, and understand the divisions of the rule in English, make nails, bolts, and tongs.

Must understand welding and simple forging, and the use of fuller, flatter, and swage.

1st rate—

Must understand simple forging such as cart washers, trowels, hammers, axes, pickaxes, hinges, fullers, flatters, and swages.

Steeling tools, repair of jumpers, tempering stone cutters' chisels, to tap and screw down to $\frac{1}{4}$ ", forging and welding mild steel, laying corrugated iron roofing under supervision, jointing cast iron and galvanised wrought iron water pipes.

"C" rate—

Forge, fit, and finish a hand vice, and a chain swivel; understand difference in forging and welding iron, and cast and mild steel, tempering, rivetting.

"B" rate—

Forge, fit, and finish a MacMahon spanner, make a pair of springs for pontoon wagon with scroll irons, etc., complete, make a simple iron or steel roof truss, tyre a wheel.

Turn simple bushes, brasses, and pins, and axletree arms.

To read a drawing, and set out and supervise work for others.

"A" rate—

Repair stocks and dies, "Whitworth's"; forge a ring bolt out of 2" round iron; forge, fit, and finish a ratchet brace; iron work of all equipment of Corps manufacture.

Make a rim lock.

Execute screw cutting, turning metal naves and bushes for pontoon wagons on lathe.

Copy a working drawing on tracing paper or cloth.

Tinsmith and Moulders.

2nd rate—

A second rate Tinsmith should be able to make canisters, common tin watering pots, and lanterns, and know how to solder. He should be able under supervision to joint cast and wrought iron water pipes.

A second rate Moulder should be able to mould small articles fairly, to mix moulders' sand, should understand the uses of moulders' tools, and be able to file up castings roughly, joint cast iron and wrought iron water pipes.

1st rate—

A Tinsmith should be able to execute work of any description in tin or zinc, and be able to solder and rivet copper and brass, to execute wire work.

1904.

To lay corrugated iron roofing.

To joint cast and wrought iron water pipes.

Moulder should be able to mould brass rings and buckles for regimental harness, or belts, or any other small casting such as zines for batteries, pontoon plugs, or fittings, etc. To have a fair knowledge of the different metals and alloys. To be able to file up castings fairly well and square.

Joint cast iron and wrought iron water pipes.

"C" rate—

To understand brazing.

In addition to being a 1st rate tinsmith, to be able to do simple moulding and casting.

or

In addition to being a 1st rate moulder, to be able to qualify as 2nd rate tinsmith.

"B" rate—

Mould and cast metal naves for pontoon wagons.

Direct the making of patterns for moulding, allowing for shrinkage.

Turn up his work on the lathe.

Read a drawing.

"A" rate—

In addition to "B" rate qualifications, must be able to copy simple working drawings, and be able to supervise work, and impart instruction to others.

Engine Drivers.

2nd rate—

To fully understand the working and management of a boiler, the separate use of the gauge glass cocks, safety valves, blow off cocks, scum cocks, feeding arrangements, and other boiler fittings.

To understand what to do in event of water being too high or too low, or pressure rising above the maximum allowed, or the feed pumps, injectors, or inspirators failing, and also the danger of tampering with safety valves. He should understand firing.

1st rate—

To fully understand all the above as laid down for 2nd rate.

To fully understand the working and management of boilers, and the separate use of safety valves and of gauge glass cocks, blow off cocks, scum cocks, feeding arrangements, and other appliances.

He should be able to show what ought to be done in case of the break down of any portion of the machinery.

"C" rate—

In addition to above for 1st rate, he must be able to execute simple repairs, to turn up brasses and bushes on the lathe.

"B" rate—

He must be able to read a drawing, be able to use the screw cutting lathe, and supervise making of patterns of castings for brasses, unions, etc., for repairs.

He should be able to make rough drawings, explaining any portion of a simple boiler and engine.

Carpenters.

2nd rate—

To saw, adze, and plane to 1/16", make common batten doors, helve and handle tools used by the Corps, and to mortise and tenon roughly.

He should be able to sharpen tools on oil stone, and keep his tools in order.

1904.

1st rate—

Execute roofing, doors, and windows of class used in native lines, also a common table without drawers, or a dovetailed box with deep lid, or "chests, stocks and dies," or "cases and frames, composing."

Under supervision, he should be able to perform all work laid down for "C" rate, if set out for him, and turn a plain cylinder.

"C" rate—

Make kajawahs, wheelbarrows, outhouse doors and frames, as per M. W. Handbook, 1902, Plate LVII., or step ladder, or common table with two drawers and four turned legs.

Also to be able to set out and erect a simple roof, such as a collar tie. Repair spokes and felloes in a wheel.

"B" rate—

Set out and execute the wood work shown in M. W. Handbook plates, also centres of arches, and do turning, supervise and set out work for others.

Be able to make ladders, cupboards, chests of drawers, writing tables, book cases, office chairs, all kinds of equipment of local purchase or Corps manufacture, and make a wheel.

Be able to read drawings of work. Be able to set out a log for sawyers.

"A" rate—

Same as "B" rate, but in addition must be able to copy on tracing cloth, and instruct the lower ratings.

Coopers.*2nd rate—*

To head and bottom casks, renew staves, and repair hoops. Also to make half cask tubs.

1st rate—

To make all kinds of casks and buckets, and new hoops; also to put a new spoke or felloe in a wheel.

He must also be able to paint with prepared paint, to prepare and use tar, and caulk boats, etc.

Sawyers.*2nd rate—*

A set of three sawyers to cut in a day with the pit saw, 35 superficial feet of jungle wood, or 45 superficial feet of teak wood (mean girth of log being not less than 5 feet).

If only a pair of men are working, to be able to do $\frac{2}{3}$ the above rates, or if working with the frame saw with a set of two men, to be able to cut in a day 12 superficial feet of hard or 20 superficial feet of soft wood.

Each man to be able to sharpen and set his saw, and gullet down to a straight line.

1st rate—

A set of three sawyers to cut in one day with the pit saw, 45 superficial feet of jungle wood, or 55 superficial feet of teak wood (mean girth of log not less than 5').

A set of only 2 men to do $\frac{2}{3}$ the above rates, or if working with the frame saw with 2 men, to be able to cut 18 superficial feet of hard wood, or 30 superficial feet of soft wood in one day.

To be able to line out work in any sort of timber, be able to cut planks of any thickness, and be able to use the cross cut, rip, and hand saws.

"C" rate—

To be a first rate sawyer, and to be able to use either the band or the circular saw. 1904.

"B" rate—

To be a first rate sawyer, and to know how to use both the band and circular saws, and also to be able to read a drawing.

Basket Maker.*2nd rate—*

He should make four bamboo or six rattan baskets in eight hours. Make common bamboo tatties, and put a seat to a chair.

1st rate—

He should make six bamboo or eight rattan baskets in eight hours. He should be able to make Khaskhas tatties, and do all kinds of cane work.

Painters.*2nd rate—*

To prepare paint for use from the powder, and know how to lay on plain coats neatly, and without undue waste. Thinning for use of liquid prepared paints.

He should also be able to prepare carpenters' finished work for the purpose of either varnishing or painting, and to neatly and cleanly remove old varnish or paint.

To do plain lettering or glazing under supervision.

1st rate—

In addition to the 2nd rate test he should be able to letter neatly and proportionately, also pick out lines and borders, and be able to make putty, and glaze a sash.

Saddlers.*2nd rate—*

He should know how to use the English awl and stitch, and should be able to repair equipment bags, cases for drags, scrapers, etc., and also to be able to half sole and repair boots.

1st rate—

He should be able to select and cut out leather for, also make and repair all leather articles of Regimental Equipment. He should have a fair knowledge of boot making.

"C" rate—

As for 1st rate, but should have "Superior" knowledge.

Tailors.*2nd rate—*

To be able to put together a khaki coat and knickerbockers, the material being cut out.

To be able to stitch buttonholes fairly, and to mend and patch neatly.

To have a good knowledge of the sewing machine.

1st rate—

To be able to cut out, sew together, and complete an ordinary khaki suit, and to make buttonholes quickly and neatly.

To be able to use the sewing machine thoroughly well.

A man must possess a 3rd class certificate of education before he can be promoted to "B" rate in his trade, and a 2nd class certificate before promotion to "A" rate.

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